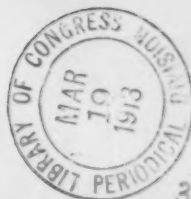


THE ³ COMMERCIAL CAR JOURNAL

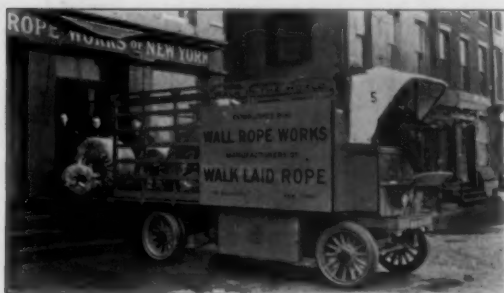
Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.



A Big January, a Big February and a Big, Big G. V. Year Ahead

Over 100 G. V. Trucks were sold during January and 1913 looms big for G. V. orders.

Among the new customers are a Kansas City bakery, a brass foundry in Boston, a lock plant in Connecticut, a textile mill in North Adams, a storage warehouse in Brooklyn, New York, several brewers, department stores in Washington and Springfield, Mass., and a flour mill in Victoria, B. C.



Reorders came in from Eastman Kodak Co., National Cash Register Co., Thompson's Restaurant, Chicago, American Express Co., and many others.

We have three customers who have already purchased over 100 G. V. Electric Trucks each. We have ten "horseless" customers.

"WE SELL THE FLEETS"

CATALOGUE 73 ON REQUEST

THE GENERAL VEHICLE COMPANY, Inc.

Principal Office and Factory:
NEW YORK CHICAGO

BOSTON LONG ISLAND CITY NEW YORK
PHILADELPHIA ST. LOUIS



No. 1. Reloading empty body which has just been deposited on platform under power from engine, controlled by man on seat with lever at side

No. 2. Taking loaded body on chassis: Demounting and remounting performed by engine power controlled by man on seat with small side lever. Three minutes to change bodies.

No. 3. Body being dumped by power from engine controlled and operated by same mechanism that demounts body. Total time to dump, one minute.

Making One Truck Do the Work of Two *Locomobile*

5-Ton Truck with New Loading and Unloading Device Solves the Problem of the Short Haul

The New Power-Operated Demountable-Dumping Body, by making the working time of the truck chassis practically continuous, makes the short haul operation of heavy-duty trucks as economical as long haul work.

Duplicate bodies save the valuable time usually wasted by the truck in waiting to be loaded and unloaded.

With the Power-Operated, Demountable-Dumping body, a chassis deposits an empty and picks up a loaded body in less than 3 minutes.

Many different materials may be handled by the same truck chassis with different

bodies—one for coal, another for bricks, cement, barrels or furniture.

A capacity load each trip may be carried in the body best suited to the material.

In continuity of operation and adaptability to diversified work, the Locomobile Five-Ton Truck chassis, with Power-Operated Demountable bodies, whether dumping or rigid, marks the beginning of a new era in motor truck economy.

No other truck but the Locomobile has this Power-Operated, Demountable-Dumping Body.

Send to any of our branches for literature, detailed information and estimates on your truck problems.

If interested send for: 1. Our plans for making a five-ton truck pay on a short haul. 2. Photographs showing Locomobile five-ton trucks in use. 3. Illustrated folders describing over thirty bodies for our truck. 4. Descriptive circular of the Locomobile five-ton truck chassis. 5. Benefits to be had from using the Locomobile five-ton truck. 6. A competitive motor truck test and its results.

The Locomobile Company of America
4 Main Street, Bridgeport, Conn.

New York
Washington
San Francisco

BRANCHES
Chicago

Boston
St. Louis
Los Angeles

Philadelphia
Baltimore
Oakland

BRANCHES

Atlanta
Pittsburgh
Minneapolis



When Writing, Please Say—"Saw Your Ad. in the C C J"

USED IN EVERY LINE OF BUSINESS



TYPE OF AUTOCAR OWNED BY BROWN'S AUTO DELIVERY COMPANY, PHILADELPHIA AND ARDMORE, PA.

One Autocar Establishes Paying Business

- ¶ Starting at the bottom, and climbing up to a high place of business success, is the experience of the Brown Auto Delivery Company.
- ¶ Mr. Brown started in business three years ago, with an Autocar, delivering packages to towns and suburbs of Philadelphia, along the Main line of the Pennsylvania Railroad. His entire living depended upon what he made out of this car. Fourteen months after putting this car into service, he realized his original investment in the car, and established an excellent paying business. Recently Mr. Brown placed an order for another car to take care of his increased business.

¶ What Autocars have done to advance the business of large corporations can be accomplished by the man who is making a start in any new enterprise. The Autocar is the stepping stone to bigger business for all.

The Autocar Company — Ardmore, Pa.

ESTABLISHED 1897

WRITE FOR LIST OF USERS

MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"

C.B. 6/11/14

USED IN EVERY LINE OF BUSINESS



TYPE OF AUTOCAR OWNED BY GARRETT BUCHANAN COMPANY, PHILADELPHIA, PA.

Delivery Efficiency Increased 50 Per Cent

Garrett Buchanan Company, of Philadelphia, have used an Autocar for two years, and declare it has increased their delivery efficiency 50 per cent. Paper and twine are now delivered to printers and other customers of Garrett Buchanan, in outlying districts, with much less delay than when they formerly used horses, and the service of Express Companies.

"We are in every way satisfied with our Autocar," said a member of the firm recently. "It has never failed us yet."

Autocars open up new fields for every industrial concern by solving its delivery problem. One Autocar averages six times more mileage than the horse-drawn vehicle. It is always ready for daily service, summer and winter, and knows no fatigue.

The Autocar Company—Ardmore, Pa.

ESTABLISHED 1897

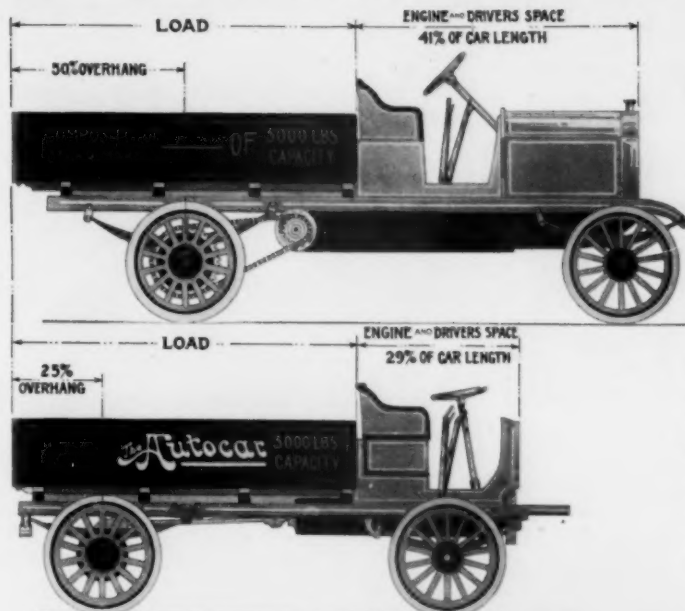
SALES AND SERVICE STATIONS:

PHILADELPHIA	NEW YORK	NEWARK	BOSTON	PROVIDENCE
Atlanta	Baltimore	Buffalo	Chicago	Framingham
Reading	Rochester	San Francisco	San Juan	Scranton
Toronto	Washington	Wilmington	York	
				Lebanon
				St. Louis
				Los Angeles

MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"

USED IN EVERY LINE OF BUSINESS



The Autocar

Comparative Diagram

Illustrating load distribution and economy of traffic, loading and garage space occupied by the Autocar in comparison with cars of other makes having similar body capacity. The Autocar has the additional advantage of a much shorter turning radius than other cars having same capacity. The Autocar has practically no body overhang. This means a uniform distribution of load between the front and rear axles, and minimizes tire deterioration. The Autocar represents balance and judicious load arrangement.

THE PRACTICAL, ECONOMICAL, AND BUSINESS-PRODUCING MOTOR DELIVERY CAR
BUILT FROM THE GROUND UP FOR RUGGED, DAILY COMMERCIAL SERVICE



THE AUTOCAR MODEL XXI.

Illustration shows the raised seat structure, a device patented by the Autocar Company, which is the exclusive feature used on every Autocar, and gives complete access to the motor and its parts; in either raised or lowered position it is locked in place.

The Autocar Company—Ardmore, Pa.

ESTABLISHED 1897

WRITE FOR NEW AUTOCAR BOOK—"INDISPENSABLE AS THE TELEPHONE." CATALOG WILL BE INCLUDED.

MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"

USED IN EVERY LINE OF BUSINESS



LIT BROTHERS, OF PHILADELPHIA, OWN 18 AUTOCARS



JOHN V. FARWELL COMPANY, OF CHICAGO, OWN 9 AUTOCARS

Leaders in their line find The Autocar indispensable

Lit Brothers Philadelphia, Pa.

Lit Brothers bought their first Autocar delivery car in May, 1911. It is still giving perfect satisfaction averaging 75 miles daily on a long suburban delivery route. This car, Lit Brothers say, does the work of six to eight horses, and has not been laid off for a single day on account of repairs.

In June, 1912, Lit Brothers purchased six more Autocars, and recently gave us two repeat orders for eleven cars. This makes a total of eighteen Autocars in their delivery service.

John V. Farwell Company Chicago, Ill.

Fifteen different motor delivery schedules in and about Chicago are performed every day by nine Autocar trucks owned by John V. Farwell Company.

They make regular daily deliveries to outlying districts, which the company never reached with horses. John V. Farwell Company uses Autocars exclusively, and in speaking of their performance, they state, "We feel that the service rendered by these commercial vehicles is primarily responsible for the large and steady increase in our city sales."

Mitchell Fletcher & Company, Inc. Philadelphia, Pa.

"We now reach, by means of our Autocars, points in the suburbs that could not possibly be reached before except through extensive relays of horses. One Autocar replaces six horses, and this is a conservative calculation. Many days in rush season, one Autocar does the work of more than six horses. The Autocar averages 60 miles per day, and we cannot speak too highly of the work the Autocar has done. We are entirely satisfied, and the Autocar is so necessary in our delivery system that we are now covering all of the suburban routes with Autocars."

Sell and Deliver

The constant turning over of merchandise is the American method. It is, therefore, important that you do not make the mistake of experimenting with your delivery service. Buy a "known quantity" to handle your deliveries. The Autocar has proved its value in the economical and dependable service it renders to merchants in "every line of business." Write for new book, "As Indispensable as the Telephone" and Catalog No. 5 C.

The Autocar Company — Ardmore, Pa.

ESTABLISHED 1897



MITCHELL FLETCHER & COMPANY, INC., PHILADELPHIA, PA.



ARMOUR & COMPANY, CHICAGO, ILL.

MOTOR DELIVERY CAR SPECIALISTS

When Writing, Please Say—"Saw Your Ad. in the C C J"

The Commercial Car Journal

VOLUME V

PHILADELPHIA, MARCH 15, 1913

NUMBER 1

NEW YORK STATE LEADS IN IMPOSING HEAVY MOTOR CAR TAXES

The Motor Truck Club, of New York, has sent a letter to every motor truck owner in the state urging them to make a protest against the new automobile laws which are now before the New York State legislature, the principal one of which has the endorsement of the Governor. This bill increases the license fee for commercial cars from \$5.00 per vehicle to \$5.00 per ton, carrying capacity up to 6 tons, and \$10.00 per ton above 6 tons. The hearing will be held before the committee in charge of the bills on March 15th, at Albany. The laws objected to are those which are included in the following synopsis, together with the club's comment on each:

Bill No. 548—Int. 509, requiring every chauffeur to furnish the Secretary of State a \$500 surety company bond. Bills are now pending requiring all operators to be licensed and the effect of this bill will be that all owners will be required to furnish a surety company bond.

Bill No. 842—Int. 770. This bill holds the owner of a vehicle liable for damages to persons or property and no defense to any action brought, shall be that the vehicle was being operated by an unauthorized person. This is a very dangerous bill and means that if your car is stolen and the operator in trying to get away kills a pedestrian or does any damage, you are liable on account of the car being licensed in your name.

Bill No. 429—Int. 408, requiring every operator of a motor car to furnish a bond of \$2,000. This bill requires no comment; the rank injustice of it is plainly shown by the bill itself.

Bill No. 896. This bill requires every motor vehicle in a city of the first-class with 1,000,000 inhabitants to come to a full stop in front of all fire houses, all street, surface and steam railroad crossings, and between 8 and 9 in the morning, 12 and 1 in the afternoon and 3 and 4 in the afternoon at all school houses. Under this bill it would be impossible for anyone to operate a motor vehicle freely. It would have to come to a full stop at every block and in the middle of the block where there is a fire or school house.

Bill No. 567. This makes the violation of a speed regulation of the statute a felony. Under this, if a man is convicted of a violation of the speed regulation he would lose his citizenship and would be in the class with those convicted of grand larceny, arson, murder and robbery. The bill would open an unlimited field for blackmail and extortion.

Bill No. 225. This bill increases the age under which a chauffeur can secure license from 18 to 21. It reduces the registration fee from \$2 to \$1. It makes the owner liable for some of the fines which would be imposed on chauffeurs under the act.

It is not fair to make the owner of the vehicle liable for the fines of his employee whether the chauffeur's violations are within or without the scope of his employment.

Bill No. 649. This bill requires that all chauffeurs be "mugged" and their photographs and finger prints taken and compared with police records before license is granted. It assumes all chauffeurs are criminals before they get their license, and every chauffeur would have to have his photograph in the rogues' gallery.

A bill giving the Secretary of State the power to revoke or suspend licenses with or without a hearing. This bill is an arbitrary one and places too much power in the hands of one man without any recourse.

A bill introduced requiring that all tail lights shall be so fixed that they cannot be operated from the interior of the machine.

Bill No. 637.—Int. 595, introduced, providing for an entire new automobile act, which includes licensing motorcycles with automobiles, changing the penalties for violations, etc. This bill is a blanket bill and covers every phase of the present law. It should be defeated. The present law is all right if properly enforced.

Report of the special committee of inquiry appointed by Gov. Sulzer. They suggest the doubling of taxation of pleasure cars and the increase on commercial vehicles from a flat rate of \$5 to a rate of \$5 a ton or fraction thereof. This bill, known as the "McClellan bill" is one of the most unjust bills that has ever been brought before the Legislature. The automobile tax is an unjust one, and to double it means that every citizen owning a machine will have to pay this additional tax to the State of New York. The only tax that is legal is the cost of registration, which should be less than \$2.

N. A. A. M. EXECUTIVE COMMITTEE MEETING

At the regular monthly meeting of the executive committee of the National Association of Automobile Manufacturers, Inc., held recently there were present W. E. Metzger, A. L. Pope, W. C. Leland, Alfred Reeves, S. T. Davis, Jr., W. T. White, R. D. Chapin, H. H. Rice, Charles Clifton, L. H. Kittredge, G. W. Bennett, Alvin Macaulay, S. A. Miles, General Manager.

A report was made by the Committee on Consolidation with the Automobile Board of Trade, indicating that plans had so far progressed that the plan is likely to be consummated in the near future.

Charles Thaddeus Terry, the association's counsel, appeared and reported the threatened adverse legislation in New York and Massachusetts, and will, in conjunction with the legislative committee take such action as may seem necessary to protect the legitimate interests of the industry.

The show situation was discussed in detail. The committee confirmed its own action taken at the February meeting in determining to conduct a show of passenger vehicles in 1914, but placed itself on record as opposing the continuance of commercial vehicle shows. The subject will be further investigated before definite action is taken.

The Electric Vehicle Association applied for and was granted an addition to the space occupied this year at the Chicago show.

The Committee on Good Roads announced its final approval of the ocean to ocean highway plan and will, in due course, prepare a report thereon to be made to members.

The Conference Committee reported conferences with representatives of the companies which produce gasoline, particularly with reference to the advance in prices and the possibility of adopting fuels of lower grade. The Society of Automobile Engineers will be requested to appoint three of its members to co-operate with the engineers of the oil producers in the investigation of fuels and carburetors.

The trade having failed to respond in sufficient force to the proposal for the erection of a special building at the Panama-Pacific Exposition it was decided to abandon the plan and

accept the sixty thousand feet offered by the exposition authorities in the Transportation Building.

A joint meeting of the Consolidation Committees of the National Association and the Automobile Board of Trade will be held prior to the next meeting of the executive committee, which is scheduled for the first Wednesday in April.

WASHINGTON POST MOTOR TRUCK RELIABILITY RUN

The *Washington Post* Motor Truck Reliability Run, which is to take place May 5, 6, 7 and 8, will be run under the rules of the contest board of the American Automobile Association, approved by the Manufacturers' Contest Association. Sherman Allen, Assistant Secretary of the United States Treasury Department, on receipt of an invitation from The Post to participate in the run, stated that the government will send representatives on the tour.

The route will cover a distance a little over 300 miles, and will be arranged to give diversity to the test and will be thoroughly practicable. The classification will run from the heaviest trucks, thereby embodying the entire field. The results will give the cost of transportation per ton, per mile, as well as the road qualities.

LARGE PROGRAMME FOR VISITING BRITISH ENGINEERS

The British Automobile Engineers, who will visit the United States as guests of the Society of Automobile Engineers, will leave London on May 17th, arriving in New York on May 26th, stopping at the Hotel McAlpin. On the 28th the party will visit Pittsburgh, and Decoration Day, May 30th, and May 31st will be spent at Indianapolis where the Speedway contests will be witnessed, and the Indianapolis automobile factories visited. The party will then proceed to Detroit and for three or four days preceding the annual meeting of the S. A. E. on June 3rd will visit the principal factories in Detroit. After returning from the lake trip with the S. A. E., the party will take another steamer ride to Cleveland, going through the automobile plants there. After this, Buffalo, Providence, Hartford, New Haven and Bridgeport will be visited.

STANDARD OIL OFFERS A NEW FUEL

The Standard Oil Company has announced that it will soon have ready for delivery, a new fuel, called "Motor Spirit." This is a product of petroleum, and doubles the amount of available gas engine fuel to be obtained from a given amount of crude oil. It will be sold for 3c a gallon less than gasoline, and it is claimed to give 25% more mileage to the gallon than gasoline. It is about five degrees heavier; has a yellow color, and has a somewhat strong odor. The new fuel has disadvantages in that it causes considerable smoke, and a slight carbonization of the cylinders. It is stated that less lubricating oil is necessary with this fuel.

CHICAGO MOTOR CLUB TO HOLD TRUCK CONTEST

One of the first commercial car events of the season will be the truck contest of the Chicago Motor Club, April 14th, 15th and 16th. This is the annual truck contest under the direction of Chairman Foraker of the truck committee. It is announced that a number of makers have already arranged to make entries.

ONE-TON TRUCKS AT LESS THAN \$1000 EACH

Stewart Iron Works Company, of Cincinnati, Ohio.,
Enter Truck Field

Interest has been aroused in the trade by the fact that the well known Stewart Iron Works Company, said to be a \$5,000,000 corporation, is now building and placing on the market in large quantities a one ton truck, guaranteed for 50 per cent. overload, and selling for less than \$1000 with express body. This is the lowest priced one ton truck yet offered, and even at this low figure is guaranteed for one year against defects in workmanship and material.

THE MOHAWK RUBBER COMPANY BUYS THE STEIN DOUBLE CUSHION TIRE COMPANY'S PLANT

The Mohawk Rubber Company has been organized at Akron, O., and has bought The Stein Double Cushion Tire Company plant and machinery. The new company is organized with a capitalization of \$350,000; \$250,000 common stock, and \$100,000 7 per cent. cumulative preferred stock, redeemable at 110 with accrued interest after January 1, 1916. The new company has been organized without any water in the stock. The plant is located in East Akron, near the factory of The Goodyear Tire and Rubber Company. It consists of a three acre tract of land, a brick factory in good condition, with switching facilities, and free water rights, having a capacity of between 75 and 100 tires per day. The Stein Company has discontinued and liquidated its business.

New Incorporations

COMMER TRUCK COMPANY has been organized in New York City, with \$3,000,000 capital, to manufacture commercial cars.

AMERICAN TRUCK COMPANY, of New York City, has been incorporated with \$3,000,000 capital. Incorporators are Jos. F. Curtin and H. O. Coughlan.

THE MOTOR TRUCK CORPORATION has been organized at Mt. Vernon, N. Y., with \$150,000 capital. The organizers are H. L. Bertsch and A. J. Albert.

MCGRAW TIRE AND RUBBER COMPANY, East Palestine, O., has been reincorporated under Ohio laws with a capital of \$1,000,000, \$200,000 of which is 7 per cent. preferred stock.

AMERICAN MOTOR FIRE APPARATUS COMPANY, Pittsburgh, Pa., has been organized with \$1,000,000 capital. The incorporators are P. F. B. Bithel, P. S. Chambers and Thomas L. P. Farr.

DREADNOUGHT TIRE & RUBBER COMPANY has been incorporated with \$1,000,000 capital at Baltimore, Md., and will erect a large factory in South Baltimore, occupying 4½ acres of land. The officers of the new company are President, A. F. Gilbert; Vice-President and General Manager, Wilmer Dunbar; Secretary, Walter E. Hill; Treasurer, C. P. Triplett. The additional directors are A. B. Whitlock, H. E. Whitlock, R. H. Diggs, Albert W. Adt and Walter B. Swindell, Sr.

PERSONAL ITEMS

EDWARD Q. CORDNER has been appointed manager of the Garford Company's Chicago branch.

H. S. HOUP has resigned his position of sales manager of the American Locomotive Company.

GEORGE V. McMAHAN has become assistant sales manager and advertising manager of the Remy Electric Company, Kokomo, Ind.

A. J. DIEFENDERFER has been appointed manager of the New York City branch of the Lozier Motor Company.

R. B. McFARLAND has succeeded A. G. White as manager of the Locomobile Company's branch at St. Louis, Mo.

E. R. BENSON, sales manager of the Studebaker Corporation, has been elected to the Vice-Presidency of the Company.

W. H. DAVIS, JR., has been made advertising manager of the truck department of the Locomobile Company of America.

CHAS. W. CROSS, formerly with the General Motors Truck Company, has become sales manager for the Holley Brothers Company.

R. A. DOBYNS, formerly with the Whitten-Gilmore Company, Boston, Mass., is now with the Kissel Kar branch in that city.

HUGO HOFFSTAEDTER has succeeded A. Hauschild as General Manager of the Polack Tire & Rubber Company, New York City.

GEO. W. YEOMAN has succeeded sales Manager Wierengo, of the Continental Motor and Manufacturing Company, Detroit, Mich.

GEORGE E. BLAKESLEE has succeeded W. L. Case as Vice President and General Manager of the Lansden Company, Newark, N. J.

GEORGE L. EAST, formerly with the Olds Motor Works, is now assistant advertising manager of the Timken-Detroit Axle Company.

FRANK M. RIDLER, long connected with the Pope Manufacturing Company, has been promoted to the position of sales manager.

ERNEST C. COX has been appointed manager of Findeisen & Kropf Manufacturing Company's branch at 1902 Broadway, New York City.

W. F. NORTON has been promoted to the position of general superintendent of the Selden Motor Vehicle Company, Rochester, N. Y.

LEIGH BEST, one of the vice-presidents of the American Locomotive Company, has become head of the automobile department of that company.

D. C. HATHAWAY, formerly with the Dayton Auto Truck Company, has been made manager of the Cleveland branch of the Kelly-Springfield Motor Truck Company.

W. H. WILLIAMS has been promoted to the position of advertising manager of the Franklin Automobile Company, Syracuse, N. Y., succeeding George H. Bryant.

H. H. GOODHART, formerly with the H. H. Franklin Motor Car Company, Syracuse, N. Y., has been appointed Advertising Manager for the Lippard-Stewart Motor Car Company.

O. E. STOLL has been appointed assistant sales manager of the General Motors Truck Company, succeeding E. J. Kilhorn, who becomes manager of the Chicago branch of the company.

FRED J. WAGNER, well known in the automobile trade, has become head of the Consolidated Lubricants Company, which hereafter will be known as the Wagner Oil Company, New York City.

W. W. WUCHTER, formerly president and general manager of the Swinehart Tire & Rubber Company, Akron, O., has become identified with the Gibney Tire & Rubber Company, of Philadelphia.

H. W. MILLER, formerly connected with the sales department of the Studebaker Corporation, has joined the sales organization of the Lozier Motor Company, with headquarters at the central offices at Detroit.

JOHN P. ADAMSON, Columbus, Ohio, has sold out his interest in the firm of Adamson-Wedemeyer Auto Company, and will cover the state of Ohio for the Truck Department of the International Harvester Company.

JAMES JOYCE, formerly general manager of the Selden Motor Vehicle Company, has been made manager of the Philadelphia branch of the Kelly-Springfield Motor Truck Company. His branch is located at 4518 Baltimore Avenue.

ELROY J. KULAS has become the general sales manager of the Peerless Motor Car Company, Cleveland, O. Mr. Kulas was president and general manager of the Tungstolier Company, Cleveland, O., of which he made a brilliant success.

W. M. ROBERTS has discontinued his connection with the Mais Motor Truck Company, and is now prominently connected with the sales department of the Stewart Iron Works Company, Cincinnati, O., makers of the Stewart commercial car.

W. C. PRICKETT, formerly district manager in Northern Ohio for the Randolph Motor Truck Company, has been appointed salesman in the Cleveland branch of the Kelly-Springfield Motor Company, located at No. 1829 E. 13th Street, Wigmore Building.

F. W. ELSTON, sales manager of the Petroleum Coke Company, Philadelphia, Pa., manufacturer of Motorlight oils and greases, was formerly a branch manager of the Marshall Field interests, with which concern he made quite a sales record. His aggressiveness will no doubt be felt by the competitors of the Petroleum Coke Company's products.

FINANCIAL ITEMS

CLEVELAND-GALION TRUCK COMPANY is in the hands of A. B. Thompson as receiver.

POSS MOTOR COMPANY, Detroit, Mich., referee L. E. Joslyn, has sold the remaining property of the company to Charles D. Todd for \$5500.

RANDOLPH MOTOR TRUCK COMPANY, Chicago, Ill., and Flint, Mich., is in financial difficulties. Its assets are stated to be \$47,000 and liabilities \$65,000.

KNOX AUTOMOBILE COMPANY, Springfield, Mass., has been declared bankrupt. Its assets are given as \$1,380,386 and liabilities as \$1,286,409. The receivers, E. O. Sutton, H. G. Fisk and C. C. Lewis, are endeavoring to effect a reorganization.

Trade Changes, New Factories and Trucks

RAVENNA AUTO TRUCK COMPANY, Ravenna, O., recently organized, is erecting a plant 50 x 150 ft.

TRIPLE ACTION SPRING COMPANY, Chicago, Ill., is now located in a new factory at 56-61 E. Twenty-eighth Street.

BLAIR MANUFACTURING COMPANY, Newark, O., have had such a large sale of commercial cars that they have decided to double their output for this year.

KELLY-SPRINGFIELD MOTOR TRUCK COMPANY, Springfield, O., has moved its New York City branch to 239-241 W. 56th Street.

RAPP MANUFACTURING COMPANY, Toledo, O., manufacturer of spark plugs, has changed its name to the Toledo Spark Plug Manufacturing Company.

WILLYS-OVERLAND COMPANY, Toledo, O., is building a new office building 80 x 200 ft., five stories high, on Central Avenue between Yost and Derby Streets, Toledo, O.

THE NATIONAL MOTOR VEHICLE COMPANY, of Indianapolis, Ind., is erecting an addition to its factory in the shape of a modern brick and cement building.

CHAS. E. KELLOM & COMPANY, Philadelphia, Pa., maker of Invader Oils, has transferred the entire business and good will of the company to a new company, to be known as The Invader Oil Company.

MOTOR WAGON COMPANY, of Detroit, Mich., has decided to add a 1/2-ton truck to its models for 1913. The new 1/2-ton wagon will be constructed of standard parts and a four-cycle, four-cylinder motor will be utilized.

BROWN COMMERCIAL CAR COMPANY, Peru, Ind., has sold its unoccupied foundry building to the Peru Machine & Castings Company. This company will hereafter manufacture the castings for the Brown Company.

WHITE COMPANY, Cleveland, O., has added to its factory space a one-story sawtooth building 160 x 240 ft. to be used for chassis testing and body building, and allows for just that much expansion in other departments.

AUTOMOBILE MANUFACTURING & ENGINEERING COMPANY, Detroit, Mich., has acquired a factory site of 108 acres at Nashville, Tenn., and will at once construct a factory 60 x 200 ft. for the production of the Evans commercial car.

GOODSPEED-DETROIT MANUFACTURING COMPANY has been organized in Detroit, Mich., for the purpose of manufacturing automobile parts. The new company will erect a two story factory 100 x 160 ft. on Parker Avenue, near Hastings Street.

J. A. MAIS COMMERCIAL CAR COMPANY is being organized in Indianapolis, Ind., to manufacture a new 1500 lb. commercial car, designed by J. A. Mais, who is a younger brother of A. F. Mais, formerly of the Mais Motor Truck Company, and now with the Studebaker Corporation.

DIEBOLD-PETERS COMPANY, Cleveland, Ohio. Charles C. Diebold has retired from the company and organized a new company to be known as the Diebold Products Company, which has located on St. Clair Avenue, near 55th Street, and will specialize in the manufacture of automobile parts.

AMERICAN AUTOMOBILE MANUFACTURING COMPANY, New Albany, Ind., has been succeeded by a reorganized company under the name of the Ohio Falls Motor Car Company, with a capital of \$450,000.

THE SWINEHART TIRE & RUBBER COMPANY, of Akron, O., has let contracts for additional buildings. One addition, 100 x 70 ft., and three stories high, will be added to its main plant. Other buildings, including a laboratory, 30 x 60 ft., have been erected. In the main building will be installed the most modern, up-to-date rubber machinery capable of tripling the Company's present output.

CAPITAL INCREASES

CROXTON MOTOR CAR COMPANY, Washington, Pa., has increased its capital stock from \$300,000 to \$400,000.

FOUR WHEEL DRIVE AUTO COMPANY, Clintonville, Wis., has increased its capital from \$110,000 to \$250,000.

GENERAL MOTORS TRUCK COMPANY, Pontiac, Mich., has increased its capital by the addition of \$250,000.

BOWLING GREEN MOTOR CAR COMPANY, Bowling Green, O., has increased its capital from \$100,000 to \$200,000; \$75,000 of the additional stock is 7 per cent. preferred and \$25,000 common.

H. H. FRANKLIN MANUFACTURING COMPANY, Syracuse, N. Y., has increased its capital stock from \$300,000 to \$1,500,000, divided into 9000 shares of common and 6000 of 7 per cent. cumulative preferred.

MATHER SPRING COMPANY, Toledo, O., has increased its capital stock from \$100,000 to \$300,000. Improvements and additions to the factory will be made as soon as spring opens, costing approximately \$100,000.

VELIE MOTOR VEHICLE COMPANY, Moline, Ill., has increased its capital stock from \$600,000 to \$800,000, and the capital stock of the Velie Engineering Company has been increased from \$100,000 to \$200,000.

AMERICAN TIRE & RUBBER COMPANY, Akron, Ohio, has increased its capital stock from \$200,000 to \$500,000, and Adam Duncan has been succeeded to the presidency of the company by James Shaw. Frank Pfeiffer has been elected treasurer.

NEW BRANCHES

MAIS MOTOR TRUCK COMPANY have established a Chicago branch and service station at Nos. 716, 718 and 720 East 39th Street.

INTERNATIONAL MOTOR COMPANY, of New York City, has opened a New England branch at 201 Pleasant Street, Boston, Mass., in charge of R. F. Ketchum, who was formerly with the General Motors Truck Company.

EDW. G. BUDD MANUFACTURING COMPANY, Philadelphia, Pa., manufacturers of metal automobile bodies, have established a branch factory at Detroit, Mich., having acquired the plant formerly occupied by the Grabowsky Power Wagon Company.

ABENDROTH & ROOT MANUFACTURING COMPANY, 50 Church Street, New York City, have opened a sales office and service station at 278-80 Halsey Street, Newark, N. J. A. G. Bogardus is general manager of the truck department of the company and will make his headquarters at the Newark depot.

THE PUBLISHERS' PERSONAL PAGE

"It makes a big difference whether you retire from business, or business retires from you."

The use of trucks is increasing at a rate which is astonishing even those most intimately associated with the commercial car industry. The number of trucks in use to-day is variously estimated at from forty-five thousand to over fifty thousand. Statistics show that last year's output was in the neighborhood of thirty-four thousand. This coming season will undoubtedly add eighty thousand cars to this number, which, even allowing for the cars which go out of commission, will mean a total in use of not less than one hundred and ten thousand.

Are you using trucks?

Be Up to Date

The time has gone by when past successes were considered an element of strength. In this day and age experience counts for less than it formerly did. This is an age of great progress; of rapid change; experience is not needed so much as is courage to break away from old methods.

Have You the Courage?

Have you broken away from the old horse methods? Are you up to date? Have you adopted and perfected a system of commercial car delivery in your business? This is a vital question at the present time. It has been said, "The man that does not avail himself of modern methods, is right at the outset giving himself a handicap that scarcely the wit of a Mark Twain, the genius of an Edison, or the ability of a Rockefeller can overcome."—Use trucks!

America Ahead

The superiority of America in the manufacture of machinery holds good in regard to the making of motor-driven trucks. American merchants have shown their progressiveness to the world by adopting commercial cars to a greater extent than business

almost the same as touring cars, and the American maker has come up to this demand with his product.

Our Second Anniversary

Speaking of remarkable growths, we must not fail to mention the tremendous increase in circulation which is taking place in the Commercial Car Journal. This issue is our birthday number, and marks the second year of our growth. From the outset the Journal has been well received, and we take this opportunity of thanking our readers and advertisers for their appreciation of our efforts, and trust that we may continue to be mutually helpful to each other in the future as in the past.

Circulation Statements

The stand which the Chilton Company has taken to make it compulsory for all trade publications to make known their circulation by means of post-office records, is receiving the support and sanction of the car makers.

The feeling on this subject is shown by the accompanying letter:

THE CHILTON COMPANY,
Philadelphia, Pa.

Gentlemen:—We wish to take this means of advising you of our appreciation of your efforts towards making it obligatory upon periodicals to print detailed circulation statements in each issue.

We recognize that this fight that you are carrying on, is one for the interest of the advertiser as well as yourselves, and we are glad to note the efforts that you are putting forth in that direction.

Yours truly,

AVERY COMPANY.

E. R. Bowen,
Advertising Manager.

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men of any other nation. Even in London streets trucks appear scarce as compared to New York or Chicago. In the matter of motor 'buses alone does Europe still lead us, but this has been brought about by the lack in Europe of such efficient street-car service as has existed in this country for many years. To an American, a lumbering, coal locomotive with smokestack belching volumes of black smoke, is a crudity which would not be tolerated in any business section of our large cities. Americans demand trucks which operate and ride

An Effective Form for Keeping Daily Truck Expenses

BY ALBERT M. PEARSON

Sales Manager, Philadelphia Truck Department, The Locomobile Company of America

For a long time the fact has been apparent that a cleaner cut system of keeping truck costs must be evolved if the truck is to be brought to its highest point of efficiency.

In nearly every instance investigation proves that two conditions exist; one is that no especial effort is made to keep the truck expenses; and the other one is that it is gotten up on a monthly form in such shape that few men take the time to digest it.

The man who really should be checked up and brought to realize the existence of his trucks is the man who is responsible for the investment therein, and for the expenses that are necessarily incurred in the operation of these trucks.

It is a strange, but absolutely true fact, that whereas every business house will balance its cash each day, none of them balance the expense accounts each day, and yet the cash is an absolutely certain factor; whereas the expense account is one which varies in such particulars that it may even become a menace to the welfare of the business if it is not properly brought before the man who is spending the money.

It is conceded by everybody that a perpetual condition, such as a perpetual inventory, automatic reports, etc., are the things which are necessary at the present time for the successful conduct of a business enterprise; therefore, years of experience in truck transportation work has taught that the only possible way by which a man can successfully operate trucks is to know exactly what his truck is costing him each day.

To cover this point, therefore a Daily Truck Report was devised which will give an adequate illustration of the idea. This is not a form for any particular business, but is a suggested form, which, modified to meet the needs of any business, will, if properly applied, prove highly successful.

JOHN SMITH DRY GOODS COMPANY	
Smithville, N. J.	
Daily Truck Report—Truck No. 14.	
Investment \$5,000.00.	
Driver: John Cranston.	Date, October 7, 1912.
Fixed Charges.	
Driver	\$3.00
Garage	1.00
Insurance63
Interest42
Variable Expenses.	
Depreciation	\$2.20
Tires	3.40
Repairs (Regular)	
Repairs (Accident)	
Gasoline, 10 gallons	1.70
Oil20
General, Rope	1.25
Total	\$13.80
Memorandum.	
Start, 8.15 A. M., Odometer 2450; Finish, 5.45 P. M., Odometer 2500; Number round trips, 5; Road conditions, fair; Material, cement; Gasoline received, 10 gals.; Oil received, ½ gal.; Mileage 50; Tonnage, 25. Tire adjustments..... Date.....	
Cost.....	
Remarks: (Report trouble, delays, etc.) ½ hour delay at wharf.	
WILL OWENS, Transportation Manager.	

It will be readily seen that the report is divided into fixed charges and variable charges. The fixed charges naturally remain in the same at all times in accordance with the locality in which the truck is operated. The variable charges are made out on a mileage basis, and are, of course, the element in which the danger of excessive cost lurks.

On the report, dated October 7th, is shown a fairly normal day. The only item which seems out of the way is the fact that \$1.25 was spent for rope. A glance at some of the other reports within the last week or ten days will show you whether or not rope has been purchased recently, and if it has, it is, of course, easy to check back and find out why the item of rope appears so frequently in the expenses of the truck.

On October 8th, let us say, the report is practically the same as on October 7th, but there is \$3.00 for Repairs to be looked into, and there is also one item which must be checked up very closely, and that is the fact that although they made forty miles only on October 8th, they used eleven gallons of gasoline; whereas on October 7th, they made fifty miles on ten gallons of gasoline. This may be true from a number of different reasons—the engine running while the motor is standing still, or the low speed work necessary in heavy weather. At any rate, unless the man who spends the money knows just why this condition exists, he is going to look this matter up, if it is brought to his attention immediately after it happens, and not a week or ten days, or a month later.

On October 9th, say an item appears of \$83.25 for repairs paid on that day for an accident which occurred on the 12th day of September. The fact that the expenses on that day show \$95.80 instead of about \$15.00 is immediately going to bring to the attention of the manager the fact that an accident occurred and it is a natural thing for him to begin to investigate more closely and to find out more clearly why this accident occurred, and in what way in the future such things may be avoided.

The expenses of October 10th are practically what they were on October 7th with the exception that ten gallons of gasoline cost \$2.20 instead of \$1.70. The minute this item appears before the director of this truck, he immediately finds out why such an excess is in existence. If possible, why they can't buy gasoline cheaper, or if they cannot in some way facilitate the operation of this car so that a greater amount of mileage may be realized on a less consumption. An item also appears in the Memorandum of \$125.50 for an adjustment on tires. The presence of this memorandum will make the man, who is spending the money on this truck, at once begin to go into matters and see whether or not the tire people are really giving him the mileage guaranteed, which he has previously assumed was being done.

Such illustrations can be cited without end and of course, from this report form any number of different reports may be worked out—A Weekly Report showing an average cost; or a Monthly Report showing an average cost; but the aim is to bring to the man's notice, who is spending the money, the exact amount which has been expended on the truck each day.

THE COMMERCIAL CAR JOURNAL

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A PLEA FOR A NATIONAL FALL COMMERCIAL CAR SHOW



ISTORY is making very rapidly in the commercial car industry. But a few years ago it was questionable whether any kind of a separate commercial car show could be successful. Now, it is a question of entirely separating the commercial car shows from the present national shows of New York and Chicago, and in their place instituting a new kind of commercial car exhibit, which will be a combination outdoor and indoor show held during the month of September. There is an increasing desire on the part of the truck makers to have a show which will be essentially a trade show, and one at which the vehicles and the numerous power appliances, which are as yet in their swaddling clothes, can be demonstrated in action.

Making this big Fall show the one and only national show will simply make the New York and Chicago shows local, to be handled in the same way that the Boston, Cleveland, Detroit, Pittsburg, and other shows are now handled.

There is already manifest on the part of the Show Committee of the N. A. A. M., a desire to separate at least the truck shows from the present national shows at New York and Chicago. This was indicated at the recent executive com-

mittee meeting at which the Show Committee placed itself on record as opposing the holding of the truck shows in conjunction with the present New York and Chicago exhibits. This gives the desired opening for suggesting a big national outdoor and perhaps indoor combination show in the Fall, at some central location, such as Chicago or Detroit.

The advantages of such an exhibition are many. Trucks are more and more being recognized as a chassis upon which can be placed various types of containers. In numerous lines these compartments or bodies are actually separate machines for rapidly handling different kinds of material or commodities. The separating of the commercial car into a power driven chassis and a power operated mechanical body has only just begun. One of the greatest developments in the commercial car industry will of necessity be the growth and perfecting of innumerable power driven devices to be used in connection with the chassis for efficiently handling merchandise. Think of the stimulus to the show and to the industry, if there could be outdoor competitive trials of trucks and of these numerous devices, under conditions closely assimilating practice, and where the performance of each type could be carefully watched by dealers as well as by the purchasing agents of large contractors, business houses and corporations, from all parts of the United States.

If this big national show is held in the fall, it could take place at the same time as the national Automobile Retail Sales Convention. This would insure the getting together of the manufacturer and dealer as never before, making an event which instead of being a burden to the makers without adequate returns, would be invaluable to them as a means of placing their product advantageously.

Admission to the show should be free to all connected with the trade, a slight fee only being charged to keep out the merely curious. A business man's card should be sufficient for admission.

An indoor show could also be held in conjunction with the outdoor activity, and this could be as large and as representative as any national show at the present time, but the drawing feature would unquestionably be the live machinery shown in the open. Within the buildings, those interested could study the details of the various constructions and the manufacturers and agents could come together quietly, and contracts be arranged.

A Fall show would cause the opening of the selling season at an earlier date, more in conformity with the time at which the new models are now actually placed on the market. It is well known that large numbers of cars are seen for months on the streets before the December or January shows. With a fall show the selling season would not only open earlier but under most favorable conditions.

The manufacturers under this plan are relieved from the necessity of carrying the burden of several shows, and the entire trade would be upset and the routine of factory and office destroyed but once, instead of several times as at present. There would be an enormous saving to the trade itself in time and travelling expenses.

The shows in the large cities during the winter could be conducted by the leading dealers or the dealers' associations of the various cities, or might even be superseded, as has been suggested, by the show week at the salesrooms of the dealers which would cost less, and have the added advantage of attracting the purchaser directly to the agent's place of business. It is of course understood that the accessory dealers would

also have "open house," or perhaps an accessory show held in conjunction with the dealers' week.

The accessory makers would of course exhibit as at present in conjunction with this National Fall Truck Show, and would not have to attend as many shows as at present.

THE COMMERCIAL CAR JOURNAL would like expressions of opinion on this show suggestion.

ADVERSE COMMERCIAL CAR LEGISLATION



FROM the legislation which is now being proposed in New York state, it is evident that the truck industry is to go through the same ordeal of adverse legislation to which the pleasure car has been subjected. In early days most of this was aimed at the speed of the pleasure car. The present bills, if they become laws, would seriously hamper the development of the commercial car.

The proposed legislation now before the New York legislature is the most drastic which has yet been brought forward in connection with commercial cars; not only is it drastic, but the spirit of the measures is entirely foreign to that spirit of justice and fair dealing which we are so prone to attribute to our day and generation. Furthermore, the bills themselves if literally enforced after becoming laws, would not produce the results which they are supposed to bring about.

There are many absurd and unjust features, for instance, the requiring of a surety company bond to be furnished by each owner; the stopping of all vehicles in front of fire houses, schools, street and railroad crossings, irrespective of conditions existing at these places. Such a regulation would not prevent accidents or loss of life. Reasonable caution as to speed should be enforced at such places, but allowing the driver to do just as he pleases provided he has at some point come to a dead stop, will not bring the desired results. Another bill actually classes the violation of speed regulations as a felony, on a par with larceny, arson, murder, etc. Those most familiar claim this bill would open unlimited possibilities for blackmail. Still another bill would make the owner of a truck responsible for any damage done by it when in the hands of any unauthorized person, for example, as when stolen. Photographs and thumb prints are to be required of all drivers to be compared with police records, thus assuming the drivers to be either criminals or at least closely associated with that class. One of the most unjust bills proposes an increase from \$5 as a flat rate per truck, to a rate of \$5 per ton or fraction thereof, while horse drawn vehicles go free. This is manifestly class legislation, and would be an enormous burden on commercial car users.

In Massachusetts a committee of the N. A. A. M. a year ago were successful in their fight against a proposed law, known as the Preservation of the Highways Measure, which was unjust in many respects. This measure was again brought forward this year, together with other unfavorable legislation which is being fought by the committee.

Every truck user should be actively alive to the effects that the passing of such laws would cause. In New York state the Motor Truck Club is actively enlisting the sympa-

thies of the business men in this fight, and this club and also the committee of the N. A. A. M. believes that measures passed in either New York or Massachusetts, would unquestionably have considerable bearing on the kind of legislation put through in other states.

However, up to this time no concerted action of the automobile interests has been made to oppose special taxes on automobiles and trucks. This perhaps may be accounted for by the fact that much of the revenue thus derived has been expended on roads. This, however, does not alter the fact that all such taxes are CLASS LEGISLATION, AND THEREFORE UNCONSTITUTIONAL, and as such should be opposed whenever and wherever presented. This is a matter which should be systematically taken up by the N. A. A. M. and the various organizations connected with the automobile industry throughout the United States.

ATTEMPTS TO LIMIT TRUCK WEIGHTS

Suggestion that the S. A. E. Standardize Weights Per Inch of Tire Width



RECENTLY a bill was brought before the New Jersey Legislature which would limit the weight of commercial cars used in cities to 12 tons, including both vehicle and load. The highway commissioners of New York are also considering introducing legislation along the same lines.

It is well appreciated by those in the trade that limiting the total weight is not the best method of caring for this situation or of protecting the pavements. The actual weight per inch of width of tire is the determining feature as far as road damage is concerned. Limiting the total weight is an injustice, and would have a very injurious effect on commercial car progress. At the present time the weight per inch of width of steel tired wagons and horse trucks is very much greater than on motor trucks. The rubber tire manufacturers are careful to see that the loads per inch of width do not exceed reasonable limits, therefore the heavier the load the wider the tire, and the truck becomes if heavy, a road rolling instrument. One might as well prohibit the use of a street roller because of its weight, this being the limiting case and showing conclusively that the weight is advantageous provided the tire width is sufficient. Furthermore as the width increases the allowable load per inch of width can be increased without damage to the road, but this is limited by the rubber.

The Society of Automobile Engineers has already standardized many of the features of truck design. Here is one which is sorely in need of standardization, namely, the practical allowable weight per inch of width of commercial car tires.

If this matter is to be made the subject of legislation, it is of the greatest importance that the basis of this legislation be determined by the engineers of the automobile industry, and not by lawyers or legislators, who know nothing of the matter from an engineering standpoint. It is therefore urged by us that the Society of Automobile Engineers at the earliest possible moment take up this important subject, and standardize the weights per inch of tire width, before harmful measures based on vehicle weights are enacted into laws.

CHART



THE FUEL SITUATION:

Number of carburetor makers.

Those claiming to save fuel and increase horse power.

THIS IS NO JOKE!!!

CONVENTIONS OF INTEREST TO THE TRADE

The list of conventions given below is to be published each month so that commercial car manufacturers can communicate with the proper authorities with the idea of arranging to give lectures, illustrated talks, statistics, etc., to show the advantage of motor trucks in these various lines, also possibly to show and demonstrate their cars.

March 17-18—State and National Hardware Men's Association will hold convention at St. Augustine, Fla. G. S. Wesgrave.

March 18-20—Florida Retail Hardware Association will convene at St. Augustine, Fla. W. K. Jackson, of Lakeland, is Secretary.

March 19-21—National Hardware Dealers' Association will hold convention at Jacksonville, Fla. G. E. Noblett, Tarpon Springs, in charge.

March 25-27—Exhibition by New England Hardware Dealers' Association. Municipal Auditorium.

April—Texas Hardware Jobbers' Association will convene at Galveston, Tex. G. A. Trumbell, Dallas, President.

April 1-3—New York State Undertakers' and Embalmers' Association will hold convention at Corning, N. Y.

April 10-12—Joint Triple Convention of National Supply & Machinery Dealers' Association, American Supply and Machinery Manufacturers' Association and Southern Supply & Machinery Dealers' Association; Indianapolis, Ind., Clapp Hotel.

April 12—Convention of South Texas Wholesale Grocers' Association, Cuero, Tex.

April 17-18—Laundry Owners' Association of Kentucky will hold convention at Lexington, Ky. G. T. Graves, of Lexington, is on Executive Committee.

April 21-23—Mississippi Electric Association will hold convention at Natchez, Miss.

April 24—Convention of Iowa State Electrical Association, Waterloo, Ia. H. B. Maynard, Secretary.

May 6-8—Wholesale Liquor Dealers' Association of America will hold annual convention at Hotel Seelbach, Louisville, Ky. B. Bernheim on committee.

May 13-15—Florida Funeral Directors' and Embalmers' Association will hold convention at Jacksonville, Fla.

May 14—State Wholesale Grocers' Association will hold convention at Grafton, W. Va. W. C. McConaughy, Parkersburg, W. Va., President.

May 14-17—Convention of Southern Oregon and Northern California Mining Congress, Redding, Cal.

May 15-16—National Machine Tool Builders' Association will hold convention at Hotel Astor, New York City.

May 19-20—Convention of Arkansas Engineering Society, Little Rock, Ark.

May 19-22—Convention of National Association of Retail Grocers, St. Louis, Mo. C. H. Kraas, Chairman.

May 26-28—Electrical Supply Jobbers' Association will hold convention at Chicago, Ill.

May 27-29—National District Heating Association will hold 1913 Convention at Indianapolis, Ind. R. D. DeWolf, of Rochester, N. Y., is President, and D. L. Gaskill, of Greenville, O., is Secretary and Treasurer of the Executive Committee.

June—Convention of South Texas Wholesale Grocers' Association, Galveston, Tex. A. T. Lange, Galveston, Secretary.

June—Convention of American Iron, Steel and Heavy Hardware Association, Buffalo, N. Y. F. C. Deming, Secretary.

June 2-5—National Electric Light Association will hold convention at Chicago, Ill.

June 4-6—South Dakota Funeral Directors' Association will hold convention in Aberdeen, S. D.

June 5-6—Convention of National Hardwood Lumber Association, Chicago, Ill.

June 8-13—Meeting of the International Congress of Agriculture, Ghent, Belgium.

June 9-15—Convention of National Association of Sheet Metal Contractors, Masonic Temple, Washington, D. C. J. A. Pierpont, Secretary.

June 10-12—The American Steel and Hardware Association will convene at Buffalo, N. Y. Harry Saunders, of the Chamber of Commerce, is Secretary of the committee in charge of preparations.

June 11-13—Convention of Oil Mill Superintendents' Association, Little Rock, Ark.

June 15—Convention of Mine Inspectors' Institute of America, Birmingham, Ala.

June 24-26—Convention of National Hay Association, Chicago, Ill. J. V. Taylor, Secretary.

July—Convention of National Hotel Keepers' Association, Minneapolis, Minn. R. H. Hawkes, Secretary.

July 7-14—Carolinas Retail Hardware Dealers' Association Convention, Richmond, Va. T. W. Dixon, Secretary, Charlotte, N. C.

July 10—National Electrical Contractors' Association will hold convention at Chattanooga, Tenn.

July 21-24—Convention of National Cleaners' and Dyers' Association of the United States and Canada, Omaha, Neb. Rome Hotel.

July 21-26—North Dakota State Fair, Grand Forks, N. D.

July 22-25—Iowa State Firemen's Association will hold convention at Perry, Ia. Chief Dan Flanagan, Perry, Ia., in charge.

July 24-26—Ohio Builders' Supply Association will hold convention at Cedar Point, Ohio.

August—Cotton Carnival, Galveston, Tex. Galveston Commercial Association, F. M. Lege, Jr., Chairman.

August 14-16—National Electric Lighting Association will hold convention at Macon, Ga. W. L. Southwell, of Macon, is Chairman of Executive Committee.

August 18—American Florists' and Ornamental Horticulturists' Society will hold convention at Minneapolis, Minn. J. K. M. L. Farquhar, of Boston, Mass., is President.

September 1-6—Fire Chiefs' Association will hold 41st annual convention in New York City. Exhibits will be housed at Madison Square Garden. James McFall, Secretary, Roanoke, Va.

September 3-13—South Dakota State Fair.

September 3-13—Retail Grocers' Association Show, San Jose, Cal. A. F. Emlay, Secretary.

October—Convention of International Dry Farming Congress, Tulsa, Okla.

October—National Hardware Jobbers' Association will hold convention in Denver, Colo. George Tritch, Denver, in charge.

October 13-19—American Foundrymen's Association will hold convention at La Salle Hotel, Chicago, Ill.

October 14-16—Grain Dealers' National Association will hold convention at New Orleans, La.

October 20-26—Georgia State Fair. M. V. Calvin, Secretary, Macon, Ga.

November—Million Dollar Fair. New Orleans, La.

December 10-12—Wisconsin Retail Implement and Vehicle Dealers' Association will hold convention at Milwaukee, Wis. G. F. Borchardt, South Milwaukee, Wis., President.

February 9-14 (1914)—Retail Hardware Association of Maryland, Pennsylvania, Delaware and New Jersey will hold convention at Baltimore, Md. W. P. Lewis, Huntingdon, Pa., is Secretary.

Steel and Rubber Markets

Steel Makes Another Slight Advance

The market price of steel has advanced 50c a ton during the past month, due to the fact that although there was a slight lull in the quantity of orders received, the mills are still four to five months behind and many heavy orders were placed at advanced prices to secure prompt shipment, stiffening the general market.

Quotations of March 10th were:

Bessemer steel, per ton, mill 29 00 a 29 50
Open hearth, per ton, mill 29 00 a 30 00
Sheet bars, per ton 30 00 a 31 00

STEEL BARS

Steel, soft base, half ex., tidewater 1 56 a 1 61
The above prices are at tidewater in carloads and larger lots. For quantities less than 2,000 lbs., but not under 1,000 lbs., \$2 00 per ton additional is charged, and less than 1,000 lbs., \$8 00 per ton additional.

SHEETS

The following prices are for 100-bundle lots and over f. o. b. mill; smaller lots \$2 00 per ton higher.

Gauge—	Black	Galv.	Gauge—	Black	Galv.
No. 22 & 24	2 20	3 15	No. 28	2 35	3 50
No. 25 & 26	2 25	3 25	No. 29	2 40	3 70
No. 27	2 30	3 35	No. 30	2 45	3 90

IRON AND STEEL AT PITTSBURGH

Bessemer iron 18 15 a ..
Bessemer steel, f. o. b. Pittsburgh 29 00 a 30 00
Muck bars 31 00 a ..
Skelp, grooved steel 1 45 a 1 50
Skelp, grooved iron 1 45 a 1 50
Ferro-manganese (80 per cent.), seaboard 64 00 a 65 00
Steel, melting scrap 14 25 a 14 50
Steel bars 1 40 a 1 45
Black sheets, 28-gauge 2 35 a ..
Galvanized sheets, 28-gauge 3 50 a ..
Blue annealed, 10-gauge 1 75 a ..
Tank plates, 3/4 inch and heavier 1 45 a 1 50
Wire rods 30 00 a 31 00
Wire nails 1 75 a ..
Plain wire 1 55 a ..
Cut nails 1 75 a 1 80
Barbed wire, painted 1 75 a ..

Rubber Decline Continues—Reaches 94

Crude rubber continues to decline, having receded 6c per pound in the past month from 100 to 94 at which it was quoted on March 11th. The regular fortnightly sale in London showed a further loss of 1/4d to 1/2d. Quotations on March 11th were:

Up-River—	Africans—
Fine 94 a 94 1/2	Massal red 89 a 90
Coarse 69 a 70	Red C'go 89 a 90
Island Fine—	B'k C'go 88 a 89
Coarse 45 a 46	Soudan—
Cameta 40 a 47	Niggers Nominal
Caucho—	Accra, lb. 42 a 43
Ball 69 a 70	Gambia, prime 56 a 57
Centrals—	East India—
Corinto 71 a 72	Sm'k sh'ts 97 a 98
Esmeralda 70 a 71	Ceylon, bis and sh'ts. 95 a 96
Guatemala, slab 48 a 49	Pale crepe 96 a 97
Mexican—	Borneo I. 58 a 59
Scrap 71 a 72	Borneo II. 46 a 47
Strips and scrap 72 a 73	Borneo III. 38 a ..
Guayule Nominal	Pontianac—
Balata, sh't 74 a 75	Prime plantation 8 a ..
Ciudad, b'k 51 a 52	Palembang 7 a ..
Trinidad, b'k Nominal	

LONDON, March 10.—Closing: Up-river fine, 3s 11d; up-river coarse, 2s 11d; pale crepe, 3s 11 1/2d, basis first latex. Prices are for spot and nearby. Market closed quiet but steady.

SCRAP RUBBER—DOMESTIC

Boots and shoes	9 1/2 a 10
Tires—	
Automobile	9 1/2 a 10 1/2
Bicycle, pneumatic	5 1/2 a 5 3/4
Wagon and carriage, solid	9 1/4 a 9 1/2

Information Bureau and Correspondence

WHAT WOULD YOU LIKE TO KNOW? FREE SERVICE

There are many important questions about commercial cars, or their use or care, upon which we feel sure our readers would like to be more fully advised.

Write us stating fully what you want to know.

Address Information Bureau,
COMMERCIAL CAR JOURNAL, Market & 49th Sts., Phila., Pa.

TRUCK OPERATOR FAVORS STARTERS

To The Editor:

In regard to engine starters on commercial vehicles, as private operator I think there are several reasons why the starters should be made a part of the engine, and it is coming very fast and coming to stay, regardless of the protests of Mr. Manufacturer.

In the first place it is not very pleasant to go in front of the car in mud and snow to crank the engine; second, if you have a lever beside your seat to start the engine with, you will have the whole control of the machine from the seat; third, in crowded streets where you slow down the motor, sometimes stalling it, you are obliged to go down and up; that all takes time and stops traffic; and fourth, when there are many stops to be made it certainly tires one to crank the engine. In regard to having extra parts, I do not consider serious, as one more lever beside the driver will not complicate the operation of the car in any way.

Recently I saw in the Scientific American just such a starter which was very simple indeed and I am sure that even those most opposed to extra parts will not object to it.

PROVIDENCE, R. I.

WM. M. BAILEY.

In all kinds of machinery extra parts are added as the capacity, utility or convenience of the machine is increased, and this at the expense of simplicity. The automobile of today is no exception, and contains many more parts than the earliest models.

Non-stalling and starting from the seat are now talking points of the electric.

Dirty, muddy feet of drivers delivering goods, which have to be carried into the customer's house, are not inducements to trade with stores using trucks, which necessitate drivers getting into the mud. Drivers as a class suffer more from injuries due to cranking than private owners, as they are usually more careless.

The internal combustion engine is the only prime mover that must be hand started. It is really up to the manufacturers to supply this want, to put the most modern motor on an equal footing. Incorporating the starter as a part of the mechanism will cut down the number of parts to the minimum. For low-priced trucks seat starting levers or pedals might be cheaper and provide the desired simplicity.—Ed.

TRUCK MOTOR STARTERS

By L. C. Freeman, Chief Engineer of the Federal Motor Truck Company.

Is the use of a self-starter on a truck advisable? There is just one thing for the buyer to consider in answering this question and that is—does it pay?—will the greater profit be shown at the end of the year by a truck with a self-starter or by one without?

Simplicity is synonymous with low operating cost and a self-starter adds complication and a lot of it. Does this additional complication reduce the operating expenses more than they are increased by the interest on the additional investment and by the depreciation and repairs on the added parts?

The advocates of the self-starter claim for it the following advantages:—

1. The saving in gasoline, because the motor is stopped when the car is standing still.
2. The saving of the driver's time in starting the motor.
3. The advantage of being able to start from the seat if the motor is accidentally stalled in congested traffic.
4. The fact that some cities are passing ordinances prohibiting cars being left unattended with the motors running, thus necessitating either the employment of an extra man or else the stopping of the motor every time the driver leaves the car.

Examining these claimed advantages one by one, we find that either number one or number two can be eliminated at the outset, because if the motor is stopped, there is no more loss of gasoline without the self-starter than with it, while if it is left running there is no more loss of time in starting, in fact, not quite so much. So while the self-starter may justify either one of these claims, both cannot be true.

If the car is built as it should be with throttle control by accelerator only and ignition by fixed spark high tension magneto, the driver cannot leave it with the motor running faster than its fixed minimum speed nor with the spark retarded.

The gasoline consumption of a motor running idle under these conditions will not be, at a liberal estimate, more than one quart per hour, so if the motor runs idle four hours per day the consumption of gasoline will be but one gallon.

If we assume the extra cost to the buyer of a truck equipped with an air or electric starter to be \$200.00 and repair and maintenance charges \$2.00 a month, necessary to make the starter last five years, a balance sheet will not show in favor of a self-starter.

Interest at 6 per cent. on \$200	\$12.00
Depreciation at 20 per cent.	40.00
Repairs and maintenance	24.00

Total extra yearly cost	\$76.00
Saving of 1 gal. gasoline a day for three hundred days equals three hundred gals. at 18c	\$72.00

So the self-starter certainly shows no saving on gasoline.

A mechanical starter can, of course, be installed for less than the amount stated above, but even they necessitate the use of a dual or a double ignition system with a storage battery and coil and its attendant complication of wiring, while without the starter, a simple, easily replaced, high tension, fixed spark magneto with but four wires running direct to the plugs and one ground wire to an off-and-on switch mounted on a metal dash, provides the simplest and most satisfactory form of ignition apparatus.

In support of the above statement notice the advertisements of the electric starter manufacturers in which they claim

not merely to turn the motor over, but to spin it, which is manifestly impossible to do satisfactorily with a mechanical starter, hence the necessity for the auxiliary ignition, as while the motor with a fixed spark magneto can be started usually with a quarter turn of the crank, such is not always the case and the starter that works only part of the time is worse than none at all. Then it must be remembered that any form of starter, other than a mechanical one, requires power to spin the motor in starting and that this stored-up energy must be obtained from the motor when running, which means the burning of more gasoline. Then again the driver usually opens the throttle wide when starting and allows the motor to race for a moment and this again increases the consumption, so it seems that instead of there being a saving due to the use of a self-starter, there is an actual loss.

In regard to the claimed saving in time, the figures again show up unfavorably to the self-starter. The cost of a 3000-lb. truck when standing is about five mills a minute. If the truck stops ten times an hour and one-half minute is lost each stop in cranking, the loss due to this will be two and one-half cents an hour or twenty-five cents a day or \$75.00 a year. No saving is here shown in favor of the starter. It is to be remembered also that it is a much more delicate mechanism than anything else on the truck and is more liable to accident and injury with a resulting material increase in the maintenance charges assumed above. This is also the answer to claim number four.

As regards claim number three, one has but to refer to conditions in London where the traffic is claimed (and justly) to be the worst in the world and where it is very seldom that one sees a motor stalled.

The truck is at the present time a very efficient piece of mechanism and any new device which it is proposed to add must bear careful scrutiny, as to its value, not to the sales department by giving another "talking point," but to the user, from the standpoint of service and economy.

"The Public will be served" and manufacturers will be forced to furnish whatever is demanded, but any maker who does not think a proposed addition or change to be for the best interests of the user and who nevertheless follows the crowd without a protest because it is the easiest way is just as guilty as those who foster a demand for their own selfish interests.

We shall be glad to hear from others who have views on this subject.—Editor.

BELIEVES IN SIMPLICITY

To the Editor:

Your reply to the letter of the Federal Truck Company noted. It seems to me that they are right. There are already too many parts to an auto. The expense of running one is still far too high. While it may be true and doubtless generally is, that a motor vehicle can be run at less expense than horses, the fact remains that the final form will be one of extreme simplicity and light weight. Everything progresses that way. The complex is a mark of primitiveness. The simple form is the one which shows a full understanding of the problem and is a matured solution of the problem.

Adding more parts than the engine contains is not the solution of the starting matter. The driver must mount the vehicle. Why not use a ratchet start and let his weight turn the motor over as he steps into place? We fit our light buggies with a rope to pull the engine over. This has but a half dozen very small and inexpensive parts and adds a very inappreciable weight.

Simplicity will win.

CHAS. E. DURYEA.

DELIVERY CAR WANTED

[227] We wish to purchase a 1500 lb. truck for handling vegetables and small fruits of all kinds. The distance to travel would be about 100 miles per week over part macadamized and part dirt roads with some 15 to 18 per cent. grades. We thought of purchasing a friction transmission truck, but some say it will not prove satisfactory on hilly roads. Please give your opinion of the several different types of transmissions.

ASPERS, PA.

JOHN GARRETSON.

There are three general forms of transmissions used in gasoline motor trucks—friction, planetary and spur gear types. For each, the manufacturers claim many advantages. If your road conditions are as hilly as you estimate, and portions of them are composed of dirt, which at times will represent heavy going for the vehicle, we are inclined to lean slightly toward the use of a machine having a spur type of gear transmission, either what is generally known as a selective or progressive type, with preference for the former. Our advertising columns contain the names of many manufacturers of excellent machines along the lines you have in mind.—Ed.

S. A. E. BRANCHES DISCUSS KEROSENE QUESTION

At the meeting at the Metropolitan section of the Society of Automobile Engineers, 1787 Broadway, New York City, in March, and at the meeting of the Indiana branch of the S. A. E., on February 18th, at Indianapolis, the subject of discussion was the much talked of fuel question. Kerosene was discussed in New York by A. C. Bennett, of the Wilcox-Bennett Carburetor Company, and in Indianapolis by John A. Secor, of the M. Rumely Company, of La Porte, Ind.

Officers of the New York branch were elected as follows: Joseph A. Anglada, re-elected president; Herbert Chase, treasurer; and N. B. Pope, secretary.

The New York delegation protested against the radical measures now being introduced at Albany in connection with the tax on trucks, etc., and will probably send a committee to Albany.

A. C. Bennett made a statement that his company would soon have something definite and reliable in the way of a kerosene carburetor, especially suitable for use on trucks. These carburetors have already been successfully used on farm tractors.

The system employed consists of a vaporizer for the kerosene, mixing it with air, and injecting it with a small quantity of water into the cylinders; 70 lbs. compression can be used. The carburetor has 70 jets in the walls which progressively come into operation as the suction increases until all are in use.

At Indianapolis Mr. Secor, who is the inventor of the Secor-Higgins carburetor successfully used on the Oil Pull tractors, described his method of using kerosene. He does not favor heating the oil or mixture. The secret of success was said to be simultaneous regulation of air, water and fuel by a governor. This carburetor will be described in the next issue of the COMMERCIAL CAR JOURNAL.

INTERNATIONAL MOTOR COMPANY, of New York City, manufacturers of the Saurer, Mack and Hewitt trucks, have made a report showing net profits for the year ending December 31, 1912, after deducting all expenses and depreciation, \$590,149. Three new members have been added to the Board of Directors, T. L. Chadbourne, W. E. Corey and W. T. Gramm. All of the old members of the board were re-elected.

CCJ GALLERY of SALES MANAGERS

IF YOU WANT TO KNOW WHY THERE ARE SO MANY SANFORD TRUCKS—JUST LOOK INTO RUDD'S OFFICE SOME DAY

LOOK AFTER THAT ORDER!

SEND US SIX TRUCKS TO-DAY.



JAMES G. RUDD
SANFORD MOTOR TRUCK CO.

YETH THIR

NOW LADIES AND GENTLEMEN—AND YOU GASOLINE MEN ON THE LAST ROW—

"MONEY" BAKER

HE KEEPS THE DOUGH (JOKE)

SOME OF HIS TITLES
TREASURER - ADVISOR
PRES. - E.V.C. OF B
CHAIRMAN - I.C.E.
V.A.O.A.

LECTURED ON
TRUCK PROBLEMS
ETC. - E.C. - AND SO FORTH

TO

FUNDS OF ELECTRIC

15TH ANN. BOSTON

ASSN. - OTHERS

ITS ELECTRIC

BARNES.

DAY BAKER

GENERAL VEHICLE CO.

NEW ENGLAND DIV.

A LECTURER ON CURRENT TOPICS

(TO THE TUNE OF THE STEIN SONG)

OH! IT'S ALWAYS FAIR

WEATHER

WHEN GOOD FELLOES GET

TOGETHER

THERE'S A HUB IN THE

CENTRE

AND THE SCHWARTZ WHEEL

EVER THERE.

LS BOWERS.

SCHWARTZ WHEEL CO.

AUTO MFG'RS

YOU HAVE HEARD OF

THE TURKEY TROT, THE BUNNY

HUG, BUT HAVE YOU SEEN THE

LATEST?—THE SCHWARTZ INTERLOCK

"SPOKESMAN" BOWERS...

STRENGTH—MAY ITS

NAME EVER BE SCHWARTZ

FRANK TRABOLD

HIS COMPETITORS CANNOT

KEEP UP TO HIM

THEY SAY HE MUST

USE AN AEROPLANE

U.S.

FW TRABOLD

JH WILLIAMS & CO.

H.H. (HARD HITTER) DURR

THE VICTOR RUBBER CO.

YOU CAN DRIVE

FURTHER WITH

THE VICTOR

THAN WITH

ANY OTHER

HEY BOSS—JES WAIT

AM NEED A GOOD START

DEFT THINGS GOES

ABOUT A MILLION

MILES

VICTOR BLOCK TIRE

EARLE

THIS CHAP

HAS JUST SWORN

OFF SMOKING

HE HAS COVERED

THE MAP WITH

CONTINENTALS

CONTINENTAL MOTOR MFG. CO.

J. L. WIERENGO

The Systematized Service Station of the General Motors Company, at Detroit

BY LEN G. SHAW



WHEN the General Motors Company established a service station in Detroit it was with a twofold object in view: to provide owners of G M C trucks with real service, and to start a practical missionary work that would result in the adoption of this form of transportation by concerns, that must be shown. How the plan has worked out, and the results achieved in the brief space of time the station has been in commission, furnishes an interesting chapter in system as applied to the selling of motor trucks.

To begin with, a site was selected in the heart of the heavy hauling district and the owner of the land was induced to erect a fireproof building designed for the purpose. The service station has a depth of 280 ft., and a frontage of 175 ft., with an additional 100 ft. of property adjoining, that can be utilized when required.

The station has approximately 49,000 sq. ft. of floor space, every inch of which is available because of the manner in which it is laid out. It is a one-story structure, lighted and ventilated by means of a double monitor roof running the entire length of the building, a hot-air blower system placed under the monitors providing heat.

Four rows of uprights supporting the roof trusses run longitudinally and are spaced 25 ft. apart, giving plenty of room in each division thus formed for two of the largest trucks, with space to get all the way around them. If desired, three smaller trucks can be stored here.

Running lengthwise of the station, with double doors on both Fort and Lafayette Streets, are two wide aisles, in which, if it was deemed necessary, a double row of trucks could be stored without congestion.

Entrance to the station is from Lafayette boulevard, both aisles being utilized for the purpose. Exits are on Fort Street. Once inside the door the driver, if his machine is equipped with oil lamps, is required to extinguish them. Then the truck is run to the supply room, located at the entrance end of the building and between the two aisles, directly on the way to the storage space. Here gasoline is taken on by means



Interior View of G M C Garage

The trucks are so distributed over the floor that the repair and wash men have access to all sides of every car. This view shows a man examining the motor with a portable trouble lamp, while another is washing.

of a tube and a self-measuring device, fuel thus supplied being entered on the owner's charge slip. Lubricating oil is stored close at hand, and measured out by an attache of the station, the driver approving the slip. The car is checked in, the time of its arrival being noted, and it goes on to the space assigned to it, each machine having a tag numbered to correspond with the figures above its location, where it is ready for the nightly clean-up.

The floor of the station, of cement, slopes gradually to the south, or exit end, with sewer traps at frequent intervals. When the last car is in for the night, a man armed with a hose, starts at the north end of the station and proceeds down the line, giving each machine a thorough soaking. Following him comes another who puts the finishing touches on with the hose. Hot and cold water faucets are attached to each column some 4 ft. above the floor, so that a supply of water is constantly available for each machine. There is also a cut-in for electric lights on each post, so that men engaged in overhauling a machine, are not compelled to work in the dark. By the time the last machine has been washed the floor at the upper end of the row is dry, and the grade is sufficient so that all dirt is carried away.

At the outset it was customary for mechanics to go over every car each night, looking for parts that needed attention. In some instances this plan proved unsatisfactory, truck owners often intimating undue activity on the part of the inspectors, so that maintenance charges could be swelled. Now repairs and adjustments are made only upon order from the driver, eliminating a fruitful cause for complaints that were usually unwarranted.

When repairs or adjustments become necessary expert mechanics make them, charging for the time and cost of materials. No attempt is made at turning over a profit from work of this nature, the aim being rather to convince the truck owner that he is getting real service.

Adjustments and minor repairs are usually made with the car on the station floor, thus effecting a saving of time, over what would be required if each car was run into the machine



One Corner of the Manager's Office in the G M C Garage

It will be noticed that the most modern office machinery is in use, such as adding machines, desk 'phones, etc.



**A Section of the Machine and Blacksmith Shop
in the GMC Garage**

The machine and hand tools here are capable of turning out any kind of repair work

shop. Where repairs or replacements are of such a nature that the services of the machine room are required, the truck is sent there. Here is equipment sufficient for every need, it being possible to entirely dismantle a truck and reassemble it expeditiously. Skilled auto workers are constantly employed, and there is not an hour out of the twenty-four when a mechanic is not instantly available.

Adjoining is a woodworking shop, where minor repairs of this nature can be made. Close by is the parts room, an interesting feature of the system. The Detroit service station is also selling headquarters for four states, Michigan, Ohio, Southern Indiana and Kentucky, which means that it renders service to this great stretch of territory. In this stock room are carried all parts for every type of truck turned out by the General Motors Company, and also of all models made by the different truck concerns before they were absorbed by the General Motors Company. Here is to be found a museum depicting commercial vehicle evolution, some of the machines dating back nine years or more. Every piece is classified so as to be instantly available.

If anything goes wrong with a truck owned in Detroit, it is possible to make repairs at once. If it is a machine in some distant part of the territory served that meets with a mishap, the necessary parts can immediately be forwarded by express, as the location and pedigree of every truck in the district is kept in the office.

A light machine, known as a "trouble shooter," is kept to render first aid to the injured in Detroit. If a truck cared for by the General Motors Company meets with an accident, the driver calls up the service station, giving the nature of the trouble. The hurry-up machine is dispatched with a mechanic, who is equipped to make temporary repairs or minor replacements. If the accident is of a nature that puts the machine out of commission, another truck is sent out to transfer the load and see that it is delivered, while the disabled machine is towed back to the station. In this manner the owner of the truck suffers no annoyance. Delivery of goods is guaranteed by the service station, and reasonable cartage fees are charged, while the extra machine is doing the work of the disabled one, as it undergoes repairs. This insures against disorganization of delivery service, and does away with expensive

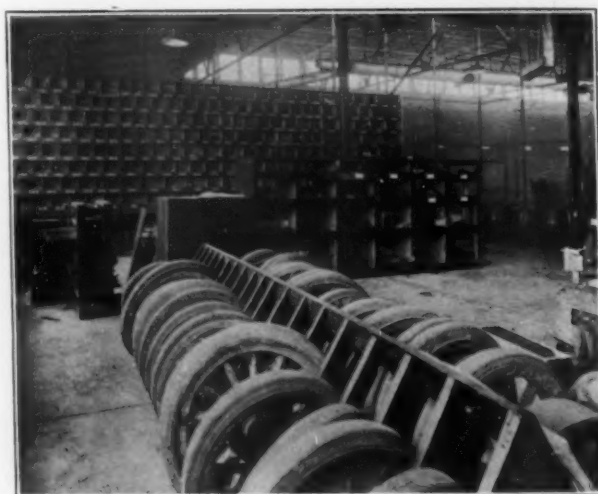
delays that might otherwise result. A sufficient number of emergency trucks are always available to guard against delay in filling in. The efficient work done in this manner has made many converts.

For the purpose of doing missionary work among the skeptical a cartage division was instituted. This consists of a dozen or more heavy duty and light delivery trucks that are rented out by the day to concerns, who find their facilities are inadequate to handle the business at times. This feature has proved very popular. It provides a practical demonstration of just what a truck can accomplish in the line served, and has, perhaps, done more to popularize motor trucks than any other single agency. So heavy are the demands that at times it is difficult to meet them all, even with the extensive equipment carried. Charges are based on the capacity of the truck and nature of the work, the flat rate including driver, machine, maintenance and all other charges.

To further demonstrate the possibilities in this direction, an interurban cartage line is conducted between Detroit and Wyandotte, 15 miles down the Detroit river. A truck makes two round trips daily, averaging something over 60 miles. Occasionally when there is an exceptional rush, it makes a third trip. Parcels are picked up at both ends of the line and along the way, and the service has proved financially profitable, as well as providing a valuable object lesson.

The general principle underlying the conduct of this service station is that of co-operation with the owner of a motor truck and the operator. The interests of the drivers are looked after carefully. Washrooms, shower-baths and individual lockers for the use of men, when they come in off the road, are provided. There is also a reading room, with lockers for street clothes. The latest magazines, trade publications, and even some of the most recent novels, are kept here for the use of the men, who are given access to this part of the institution gratis. Technical works are theirs to read for the asking, and they are not slow to improve the opportunity.

All magazines of interest are started with the manager and sent through the various office employees' hands, the superintendent and both foremen. A form is attached to each magazine, the time allotted to each man being specified, and he being required to check in and out. After the second fore-



Part of the Supply Department in the GMC Garage

Here parts of every truck ever turned out by the company, are kept



Trucks Stalled in GMC Service Station

Looking down one aisle in General Motors Company's service station, Detroit, showing lighting, ventilating and heating system, numbering plan, fire extinguishers, hot and cold water faucets and electric light plug on each column

man has seen it the magazine reverts to the office, where it is checked and turned over to the drivers' room, where there is a table and a circulating library of technical reading of no mean proportions. In this manner the maximum good is derived from every publication reaching the station.

By means of an ingeniously devised system of checks every detail of the business is a matter of record. When a machine comes in at night the time of arrival is noted on a tag, which is then fastened to the truck. On this is also shown the hours of service, mileage, quantity of each kind of oil supplied, and

the rental charges on a statement sent to the owner monthly. As a result of this double system of checking, arguments over charges rarely occur.

As will be seen by a study of the accompanying floor plan, the building is arranged to provide maximum efficiency. Oil and gasoline are taken on when a truck enters the station. The reason for this lies in the fact that they begin arriving the middle of the afternoon, and string along until late at night, making it an easy matter for each to take on supplies. In the morning they all leave at about the same time, and the congestion that would result if they had to await their turn to get gasoline and oil is done away with, it being possible to empty the station in a few minutes. Special attention has been paid to lighting at night, as a large part of the service work is done after 6 o'clock. After due investigation it was decided to use the Holoplane lighting system, which has the advantage of distributing the light equally without undue glare. As a result, the entire station is as bright at night as during the day.

"While considering the question of service too much stress cannot be laid on the importance of intelligently driving and caring for motor trucks," says J. C. Ayers, manager of the General Motors Company Detroit branch. "There is no economy in cheap drivers or inattention to trucks. Those giving the finest service day in and out, in all kinds of weather, with all sorts of loads, are trucks that are cared for as well as high-priced horses. In any of the important centers you will find that the companies who are getting the greatest satisfaction are those who give their trucks the most intelligent care and attention. Ask any of them what their equipment has meant to them, and the lessons they have learned. Invariably they will tell you, first, get the proper trucks, put the right man in the driver's seat and give the right attention to the truck. Then it will pay big interest on the transportation investment."



The Supply Department or Cage in the GMC Garage

The superintendent's office is shown in the center, with the parts boxes on either side. The gasoline and oil supply room is on the right

other data. When the truck leaves in the morning the tag is picked up, the time of departure entered, and the records are turned over to the accounting department. The lower half of the tag is a repair work order from which the mechanics work, this being filled out by the driver, with the nature of the trouble clearly specified.

On another blank is entered all the above data, together with a list of parts used and the time spent on the truck. This is made in duplicate, one slip going to the owner each day, the other to the bookkeeping department, where it is entered with

IT WAS EVER THUS.

From the same flower, the bee extracts honey and the wasp gall. From the same truck, the wise user extracts service and the novice,—repair bills.





As in former years the Chicago Show was the largest and most representative of the country. The commercial show was unusually good, largely attended, and a desire for serious investigation was evident on the part of the crowd. Some twenty-two makers who did not exhibit in the East were represented.

The absence of freaks was very noticeable. As in the New York Show bodies for various purposes were a feature. The newest and most novel of these which were not shown at New York are briefly described in the following pages. Changes in chassis designs were not numerous or radical, although worm drives were not only exhibited on more trucks, but were shown by several parts makers. Internal gear drives and individual dog or lug clutch type change speed mechanisms are growing in numbers.

NATCO NEW ONE AND A HALF TON MODEL

To the Natco one-ton chassis, first brought out by the National Motor Truck Company, Bay City, Mich., a 1½-ton type, built upon practically the same chassis, has been added, the new car being exhibited at Chicago for the first time. Natco trucks of greater carrying capacities are also being designed, and will be brought out in the near future. The design of one-ton model has been so well worked out, and has proven so successful in service that doubtless its lines will be incorporated in the larger machines. This small car is built with a 3½ x 5 in. four-cylinder motor, ignited by a U. & H. high tension magneto. A cone clutch and a three-speed selectively operated

gear set are provided, both the transmission shafts and the countershafts being carried on F. & S. heavy duty annular ball bearings, and has a double side chain drive with the driving chains enclosed in pressed steel cases. The wheel bearings are Timken rollers. Tire equipment consists of 36 x 3½ in. Q. D. solids front and rear. The machine measures 14 ft. over all and has an 8 ft. loading platform. The wheel base is 104 in., and the chassis weighs 2700 lbs. This short wheel base has been made possible by placing the motor under the seat and incorporating the radiator in the dash. Left side drive is employed with the control levers in the center. The chassis, complete, with upholstered driver's seat, and the usual equipment, lists at \$1925.

NEW UNITED STATES TWO-TON MODEL

United States Motor Truck Company, of Cincinnati, O., exhibited at Chicago an entirely new two-ton truck, and also a three-ton model which is a continuation of last year's line. This company also makes a 1½-ton model, which was not shown. The new truck is similar in general design to the 3-ton model, but has several changes. The chief of these is the new brake construction on the jack shaft. These are of contracting type, the bands being pivoted at the bottom and drawn together at the top. They are double-acting and spring release, so that they do not drag. The contact surfaces are Raybestos against steel. Brake support arm is so arranged that it can be used on either side of the car. This is also true of the brake parts, there being no rights or lefts. By removing a



pin at the lower side and a nut at the top the brakes can be instantly taken off. The rear axle in the new two-ton model is also different, Timken construction being used in the three-ton, while in this car $2\frac{3}{4}$ in. diameter, heat treated vanadium axle is used.

The engine, although of Continental manufacture, is cast en bloc, cylinders being $4\frac{1}{2} \times 5\frac{1}{4}$ in., while the larger car has cylinders cast in pairs. The general arrangement consists of engine under the hood at the front, shaft drive to the transmission jack shaft, which provides three speeds forward and one reverse, of sliding gear type, side chains to the rear wheels. The clutch is of cone type, but differs somewhat from the usual practice. The steel cone is smooth, while the ring with which it engages is lined with diagonally placed strips of Raybestos with spaces between, making it chiefly self-cleaning. The brake evener or equalizer is also somewhat novel, although used by this company for several years. It consists of a small bevel pinion working between two bevel sectors, very much like a differential. The lamp brackets on the dash are also new, the lamp being mounted on a bracket pivoted, the upper and lower portions being held in position by coil springs, giving a slight freedom of motion to the lamp and relieving it of all jar and vibration, so that the lamps do not fall to pieces, as has been the case on a good many trucks. The sub-frame on which the engine rests is flexibly mounted, the forward end being carried at each side on very short, stiff coil springs, while the rear end has a spherical seat on a cross frame member. The transmission jack shaft assembly is also three point mounted, all three of these supports hav-

ing spherical seats. The outer ends of the jack shaft housing are mounted in castings at the under side of frame, while the forward end of the transmission case is similarly mounted in a cross frame member, giving a flexible three point support. The outboard bearings of the jack shaft are mounted in self-aligning S. K. F. bearings, which allow more or less freedom of motion of the jack shaft, caring for any misalignment due to the weaving of the frame while in action. Wheelbase is 132 in. Front wheels are $35 \times 3\frac{1}{2}$ in., demountable tires. Rear wheels 37 in., fitted with $3\frac{1}{2}$ in. dual demountable tires.

The new two-ton chassis sells for \$2800; the large truck for \$3500.

LITTLE GIANT LINE INCLUDES NEW MODEL

The line of light delivery wagons built by the Chicago Pneumatic Tool Company, Chicago, Ill., has been increased by the addition of a new car, of $1\frac{1}{2}$ tons capacity, known as Model "H," while Model "F" has been improved by the adoption of a three-speed selective type of gear set and the lengthening of the wheelbase to 110 in. The Model "D" remains practically the same as last year. Both the smaller models, "F" and "D" are powered with a two-cylinder opposed horizontal motor of 5 in. bore by 4 in. stroke, mounted directly below the floor boards and driver's seat, the radiator taking the place of the dash. Cooling is by thermo-syphon circulation, while the essentials of carburetion and ignition are taken care of by a Schebler carburetor and a Splitdorf magneto, dry cells

being provided for starting. The motor is rated at 18-20 h. p., and on the Model "D," drive is through a multiple disc clutch and planetary gear set to a jack shaft and by side chains to the driving wheels. On the Models "F" and "H" a three-speed selective gear-set is fitted, while the Model "H" has a four-cylinder vertical power plant, the remainder of the design of this new addition to the Little Giant line being characterized by practically the same features as have been responsible for the success of its predecessors built by this concern, especially for rapid light delivery service.

TWO ADDITIONAL OLD RELIABLE MODELS

The Old Reliable Motor Truck Company, of Chicago, Ill., exhibited at Chicago its four and five-ton trucks which are virtually the same as last year. Two new models, however, have been added to the line, these being of two and three tons capacity respectively. These are of the same general design as the larger models, but of lighter construction. The four cylinder Wisconsin motors are used throughout, with special crank shafts and bearings. A special centrifugal governor, operated from the transmission, is supplied on all models. This governor is a special patent of the company's, and operates only on the direct drive, allowing the driver free use of the engine up to this point, but effectually preventing him from over-speeding while in high gear. A novel feature is a Kline Old Reliable eccentric brake, this being an eccentric action to tighten the contracting bands on the jack shaft brakes. A three-speed sliding gear transmission jack shaft is employed, and side chains to the rear wheels. A multiple disc clutch, operating in oil, is housed in the fly-wheel. All models have the engine under the floor board, with raised seat and cab effect. Radiators are spring suspended, carried in a separate steel frame with special rubber belting

interposed between radiator proper and this frame. The chassis prices are as follows: two-ton, \$2750, and three-ton, \$3400.

THE TWO-CYCLE FIFTEEN HUNDRED POUND MOORE TRUCK

Palmer-Moore Company, of Syracuse, N. Y., exhibited at Chicago their 1500 lb. truck with the low, medium and high-speed two-cycle Moore motor. There are several novel features in the construction this year which were not shown before. In general layout, however, the arrangement is practically the same as last year, namely, three-cylinder, air-cooled, two-cycle Moore motor at the front, under hood, steering wheel at the right, control levers at the center. The two-speed planetary transmission of special design is mounted as a part of the jack shaft assembly, and drive is from this point to the rear wheels by side roller chains. The jack shaft transmission assembly is three point suspended, one point at the front of the transmission to a pressed steel cross frame member, and two points, one at each end of the jack shaft, which is mounted on special cast bronze brackets riveted to the side frame members. The service brakes are fabric-faced contracting bands, operated by pedal through an evenner the full width of the frame. A connecting mechanism prevents a careless driver from putting in more than one speed at once, thus protecting the transmission. The emergency brakes are of expanding shoe type, operated by the center brake lever through full frame width equalizers, and are housed in drums and fully protected from dust and dirt.

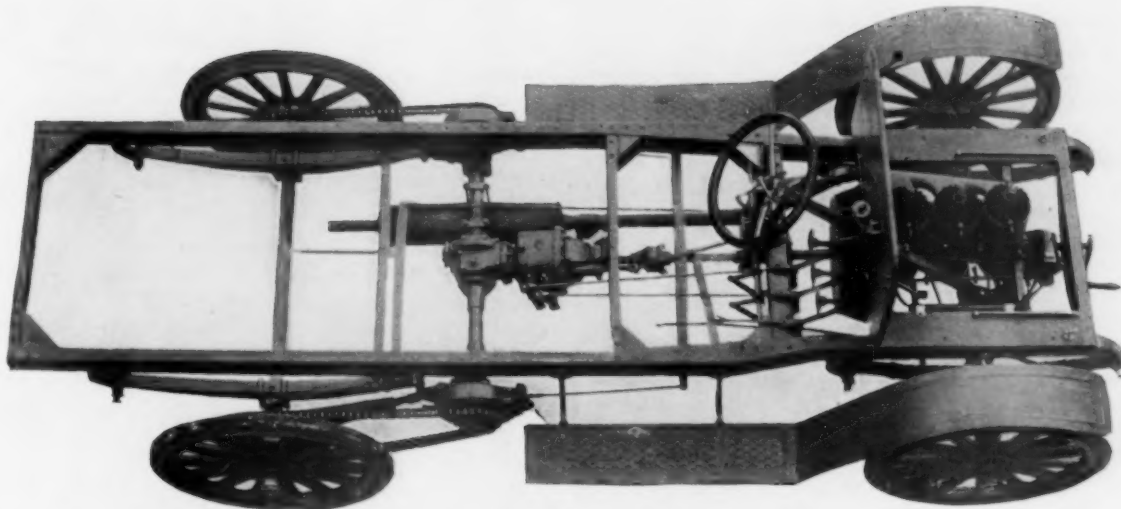
The Two-Cycle Motor

The Moore two-cycle air cooled motor has been in use for several years. A novel feature, however, has been added this year, giving a very flexible control. This consists of shuttle



The Moore Fifteen Hundred Pound Truck

The Moore truck is here shown fitted with covered, flare-board express body. Hood is of the French type, with screen at front to admit air. Brake drums of generous size are used on the jack shaft, brakes fitted with equalizers. The wood artillery wheels are fitted with solid tires

**Top View, Moore Chassis**

The three-cylinder variable port two-cycle motor is air-cooled and located forward of the dash, with magneto placed transversely in front. Drive is from the right, with levers in the center. The frame is strengthened by cross-members, with gusset plates

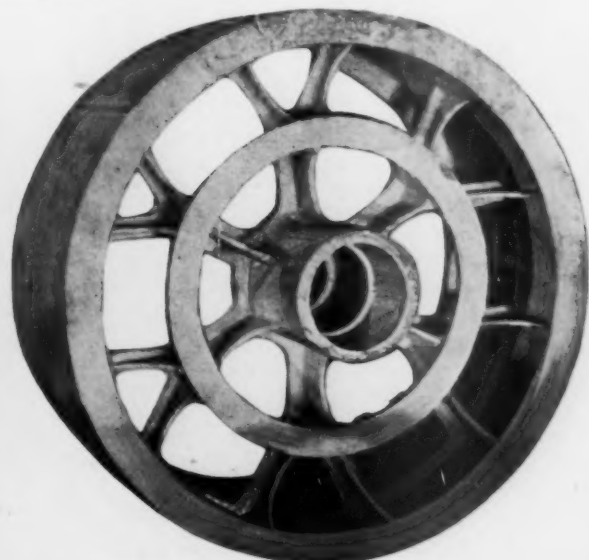
valves, controlling simultaneously the intake exhaust and by-pass. All portions consist of a series of holes which are successively covered by the bronze shuttle valves which are interconnected and moved by hand throttle. By means of these the motor speed, it is claimed, can be controlled at any desired point, making it as flexible as the four cycle. Lubrication is obtained by mixing the oil with the gasoline. The drive from the engine to the transmission jack shaft is through a short squared shaft fitted with two Spicer joints. The flywheel acts as a fan. Ignition is by Bosch magneto, with a spark fixed. The carburetor is also set, that is, left wide open. A priming device is supplied on the dash, the hand control on the wheel, however, operating the shuttle valves before mentioned.

The frame is of heavy pressed steel, channel section. Springs are semi-elliptic front and rear, rear fastened to malleable hangers, their forward ends being shackled. The rear ends and front springs are shackled, and mounted on top of the axles on integral saddles. Adjustable radius rods on vertical pivots on the rear axle and fitted with two motions at the forward end allow for all relative movements between the axle and frame and maintain the distance.

The chassis weight complete is 2300 lbs. Wheelbase is 102 in., length over all 156 in. Front tires are 36 x 2½ in., and rear 36 x 3 in. The chassis price is \$1300. The bodies are extra, 82 x 45 in. being available for loading space.

DAYTON STEEL WHEELS

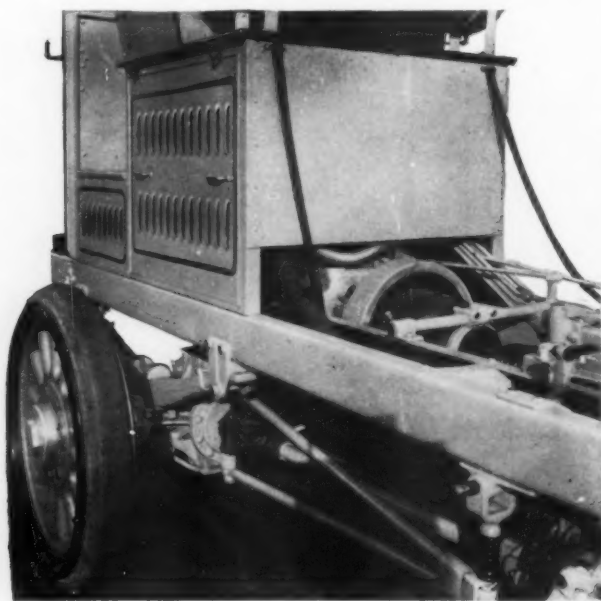
Dayton Steel Foundry Company, Dayton, O., exhibited at Chicago show their new cast steel truck wheel, a feature of which is the light section of the spokes, rims, etc. These spokes are light in section, but of such a shape that they resist the strains and are extremely strong, only six spokes being required for each wheel. Each spoke runs radially toward the rim for about half its length, and then branches into a Y-shape, the two ends of the Y in the rim and its base in the hub. The rim itself is channel section in shape, the side flanges forming a surface through which the rims which hold the tires can be bolted. These wheels are practically the same weight when finished as wood wheels of the same diameter.

**General View of the Annex to the Coliseum****Dayton Cast-Steel Wheel**

THE FOUR-WHEEL DRIVE EXHIBIT

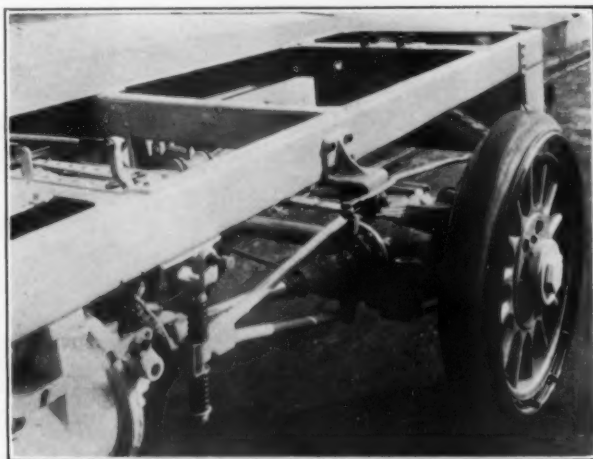
One of the most distinctive newcomers at the Chicago Show, and which attracted considerable attention from both truck engineers and users, was the Four-Wheel Drive truck, made by the Four-Wheel Drive Auto Company, of Clintonville, Wis. This outfit is one of the latest solutions of the problem of applying power to all four wheels, and it is unique in having as part of its transmission no less than three differentials, by means of which the distribution of the power is equalized, both between the two driving axles, front and rear, and between the individual wheels on the axles. The gear-set or transmission proper is located in the conventional position in the center of the chassis back of the motor. It is of the jaw-clutch type, with broad-faced gears always in mesh, and gives three speeds forward and reverse. But the drive, instead of being to a jack shaft or propeller shaft is taken by a heavy silent chain off to the left side of the car, the driven sprocket being attached to the periphery of the differential housing. This differential and the silent chain drive are encased integral with the gear-set itself. The makers term this the "sub-transmission."

The purpose of this differential is to equalize the distribution of the power to the two axles, propeller shafts extending aft and forward to differentials on the axles themselves. Both of these axles are of the full floating type, and only differ from standard members of this class in having the driving gear and differential closer to the left side wheel than customary. The application of power to the front wheels is made possible by the employment of patented ball and socket steering joints, which enclose a special form of universal, permitting the wheels to drive in either a straight line or at an angle, as in rounding corners. The construction of this combination steering power applying joint is unusually well-worked out, and doubtless responsible, to a large extent, for the success of the F. W. D. trucks in service. The center of the universal joint is in exact line with the center of the steering pivot, thus avoiding undue stresses.



Four-Wheel Drive Truck, Front End
Showing the driving shaft and spring arrangement

Two chasses are listed, the Model "G," $1\frac{1}{2}$ -ton capacity truck, and the Model "B," three-ton. In the former case, the power plant is a four-cylinder $4\frac{1}{2} \times 5$ in. T-head motor, rated at 28.9 h. p., and in the latter, a $4\frac{3}{4} \times 5\frac{1}{2}$ in. unit, rated at 36.1 h. p. These motors are of the Wisconsin make, having pump pressure force-feed circulating oiling system, through hollow crank-shaft, centrifugal cooling circulation, enclosed valve mechanism and dual independent ignition, using a Bosch high



Four-Wheel Drive Truck, Rear End
Showing driving shaft, rear axle construction, and torsion arm

tension magneto and a battery and coil equipment. A ball type of governor, located in the crankcase, keeps the motor speed down to 1000 r. p. m. The motor is located under the driver's seat, access to it being through the usual removable side panels of the motor compartment. The lower half and the front end of the crank are made removable to facilitate inspection and repair. The radiator is of the honeycomb type and is carried on trunnions and is mounted as to be easily removable.

The first step in the transmission of the power is a Hele-Shaw multiple disc clutch running in oil. It is so mounted as to be readily removable without disturbing either the motor or the transmission. Passing the latter member, which has already been described, it will be noted that the service brakes for both sets of driving wheels are located on the propeller shafts close to the main differential, and a further novelty of their construction is to be noted in the fact that the brake drums are secured to the universal joints on these shafts. Application is by means of the usual pedal, and as an equalizing bar is provided, the braking effort is distributed equally over all four wheels. These brakes are of the external contracting type, and in addition there are the usual driving wheel brakes in drums on the rear wheels. They are of the internal expanding type and are operated by a hand lever. It is claimed that the truck can be stopped in practically its own length by the use of the service brakes alone, so effectively is the braking effort applied to all four driving wheels simultaneously. The rear axle is reinforced, two truss rods being placed on its upper side and one below it.

The frame is a 5 in. pressed steel channel of a uniform width of 3 ft., measuring 16 ft. 8 in. over all, the wheel base of the smaller model being 124 in. and the larger 125 in. The former has a turning radius of 46 feet, and the latter of 46½ ft. On standard chassis of both capacities, a loading plat-

form of 136 in. is available, the F. W. D. trucks also being built with specially long chassis for lumber hauling and similar service requiring an extra long truck. The frame is carried on semi-elliptic springs forward and a platform suspension at the rear. A screw and nut type steering gear is employed, control being of the conventional form. One of the features of the spring equipment is that they are so placed as to act as a three-point suspension. The load distribution is unusual in that there is only 10 per cent. more of the weight at the rear than at the front. The 1½-ton chassis lists at \$3600 and the 3-ton at \$4000.

Thirty-six in. artillery wheels are employed front and rear on both models, the gear ratio giving a maximum speed of 16 m. p. h. for the smaller size, and 14 miles for the larger. As power is applied to all four wheels, the tire equipment is the same throughout, consisting of 36 x 4 in. single for the 1½-ton chassis, and 36 x 5 or 6 in. single for the three-ton.

THE HARDER EXHIBIT

Harder Auto Truck Company, Chicago, Ill. The line of trucks built by this company ranges from a one and a half tons capacity up to 5 tons, and including a standard two-ton, special two-ton and a three-ton. They are unique in being the product of a concern that entered this field after having had several years' experience with trucks of other makes in the transportation service of a storage warehouse, Charles C. Harder, president of the truck building company also being the chief executive of the storage and van company that bears his name. Among the more important changes that have been made in the five-ton chassis since it was exhibited at the Chicago Show last year, are the adoption of an unusually long stroke 50 h. p. motor, having a bore of 4¾ in. and a stroke of 7 in., instead of the 5 x 6 in. motor; the use of a four speed gear set instead of the three-speed type formerly employed, and the employment of heavier driving chains. While all the models of the Harder trucks thus far built have been of the motor-under-the-seat type, the company has decided to build them with the motor under the hood on order.

The most important feature of the exhibit in the Coliseum annex was a Harder five-ton truck, which was one of two sold to an Australian firm. Apart from the difference in the size of the motor and the dimensions of the members, all models of the Harder trucks are designed and built along substantially the same lines. The motor of the 1½-ton size is a 4 x 4 in., the two-ton standard 4¼ x 4¼ in., the two-ton special 4¾ x 5 in., the same motor also being used on the three-ton, while the five-ton size has the unusually long stroke motor already mentioned, the power ranging from 28 h. p. in the case of the smallest to 60 h. p. in the largest. All models are fitted with three-speed selective gear sets, multiple disc clutch and double side chain drive, the foot brakes being carried in drums on the jack shaft and the emergency brakes on the rear wheels, the former being a contracting type and the latter an internal expanding form.

One of the special features of the Harder chassis construction is the equalizing traction bar at the rear. The semi-elliptic springs of the suspension instead of being shackled to the frame, as is

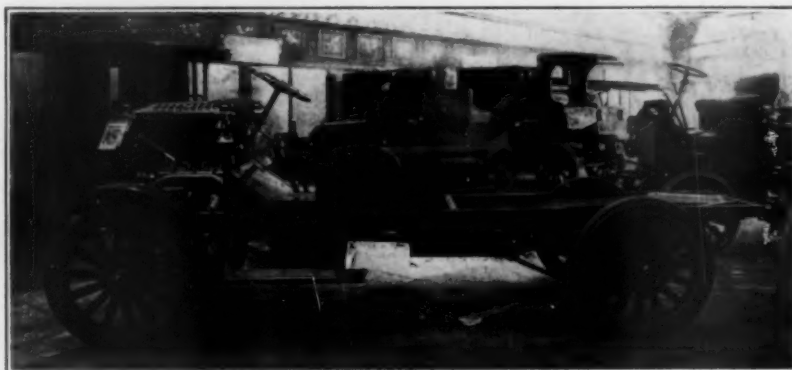
customary, are attached by means of swiveling joints to a heavy cross bar of the open V form, mounted on a swiveling pin carried in a bracket riveted to the centre of the rear transverse member of the frame. The purpose of this device is to equalize the load on the springs and the driving wheels regardless of the inequalities of the road surface. When one driving wheel drops into a rut or hole the equalizing traction bar maintains the loading platform at its normal level, thus preventing the load from "listing" and being concentrated on one spring and one driving wheel. Both drivers, accordingly, have the same traction.

THE SAMPSON AND HERCULES

Maxwell Motor Company, of Detroit, Mich., exhibit as distributors, the Sampson and the new Hercules. An entirely new Hercules truck was shown at Chicago, having made its first appearance at Detroit. This is a one-ton truck. The general layout is 4-cylinder Continental engine under the hood at the front, shaft drive to Brown-Lipe transmission jack shaft and side chain drive to the rear wheels.

The motor is 3¾ x 5¼ in., cast en bloc, four point suspended on a sub-frame of channel iron. This motor is fitted with a governor of fly-ball type, holding it down to 1200 r. p. m. A feature of this truck is the left side drive with center control levers. The throttle and spark levers are eliminated from the steering column, there being an accelerator provided as the only control. Ignition is by Bosch high tension magneto with set spark. The operation is very simple, the driver having simply to keep his foot on the accelerator, the governor preventing over-speeding and slower speeds can be obtained by simply relieving the pressure on the accelerator pedal. Another feature is the low-hung frame which is obtained by under-slinging the rear springs, and makes the truck easy of entry and egress. A short running board is provided at each side of the driver's seat, and both sides of the truck are open so that the driver can enter at either side. Another feature is the heavy channel section radiator guard and bumper, and the radiator is spring suspended. The brakes are all on the rear wheels, the service brake being an external contracting band and the emergency brake in internal expanded shoes, both operated through steel pull rods parallel to the frame and running to a cross shaft provided with eveners.

The rear axle construction throughout is Sheldon. The adjustable radius rods are arranged to allow for all motions. The rear springs are semi-elliptic, underslung and shackled at



Chassis of the New One-Ton Hercules

both ends, the forward shackle support being integral with the outboard jack shaft hanger. The rear shackle support is a cast steel member under the frame and riveted both to the bottom web and the vertical web. The front axle is a drop forging of I-section, also Sheldon construction, the pivots being fitted with roller bearings. The wheels are 37 in. in diameter with Firestone $3\frac{1}{2}$ in. tires and S. A. E. standard demountable rims. The wheelbase is 130 in. Frame is of pressed steel, top and bottom flanges of the side frame members being widened throughout the central portion. These members are narrowed at the front and braced by four channel section pressed steel cross frame members and by similar diagonally placed members at the rear corners.

The change speed gears, as before mentioned, form a part of the jack shaft assembly, are of Brown-Lipe manufacture, giving three speeds forward and one reverse, with selective operation. The steering gear is of the Ross irreversible type.

INDIANA LINE COMPRISES THREE MODELS

While newcomers in the commercial car field, the Harwood-Barley Manufacturing Company, of Marion, Ind., which is marketing the Indiana trucks, has had a good many years' experience in manufacturing in other lines. The Indiana line consists of three models, rated at one to $1\frac{1}{2}$ -ton capacity, two-ton and three-ton, and in the design the company has apparently investigated the market thoroughly and selected parts that have successfully stood the test of commercial service for a number of years past. The power plant in each case is a Rutenber four-cylinder vertical L-head motor, with separately cast cylinders, the $1\frac{1}{2}$ -ton car having a 4×4 in. motor, the two-ton a $4\frac{1}{8} \times 5\frac{1}{4}$ in., and the three-ton a $4\frac{3}{4} \times 5$ in. motor. The clutch on all models is a Hele-Shaw multiple disc, running in oil, driving through a Covert vertical type three-speed selectively operated gear-set. This form of gear-set is particularly advantageous for truck use, as by the removal of a side plate in the housing, access is readily had to all parts of the transmission without the necessity of disturbing the body or providing a trap in the floor to get at this essential. The shafts of the gear-set are mounted on Timken roller bearings. A full floating type of jack shaft is employed, the driving shafts being of vanadium steel, $1\frac{3}{8}$ in. in diameter. At the differential end the shafts are square, carrying flanges at their outer ends to which the sprockets are bolted. The differential is provided with a locking device, which operates only on the low or reverse speeds, and automatically releases with the shifting of the gears to a higher speed. A universal is interposed between the multiple disc clutch and the gear set, the propeller shaft being nickel steel $1\frac{1}{2}$ in. diameter on all models.

Suspension is of the semi-elliptic, with an auxiliary transverse spring at the rear. Artillery type wheels are employed, $34 \times 3\frac{1}{2}$ and 4 in. front and rear, solids being fitted on the $1\frac{1}{2}$ -ton size, 36×4 in. single solid front and $36 \times 3\frac{1}{2}$ in. dual rear, on the two ton, and $36 \times 4\frac{1}{2}$ in. single front with 40×4 in. dual on the rear of the three ton. Pneumatics are fitted at an extra charge

on the small truck. The wheelbases are 135, 144 and 160 in. respectively, while the chasses weigh 3320, 4500 and 6000 lbs. They list at \$2000, \$2500 and \$3200, with the usual equipment of oil lamps, jack and tools. The standard types of body offered on the two larger sizes are the flare board express style or the stake type, giving a loading platform $10\frac{1}{2}$ ft. long on the two-ton and 12 ft. on the three-ton, while an express body, stake type or furniture carrier, 4 ft. 2 in. to 5 ft. wide, according to type, and $9\frac{1}{2}$ ft. long, is offered on the $1\frac{1}{2}$ -ton chassis.

A CHAPEL ON A TRUCK CHASSIS

The leading feature at the Chicago motor truck show in the way of new things was a church on a motor truck chassis so fitted out as to penetrate parts of the country where the railroad chapels do not reach. It is the first motor chapel ever built, and was purchased by the Catholic Church Extension Society, at a cost to approximate \$8500.

The body is fitted to an Alco chassis, of two tons capacity, and contains the complete paraphernalia of a church. It will be employed first in Texas, with Brownsville as the starting point.

With two priests in charge, the vehicle will be used for missionary work in those parts of the country where no churches exist as yet or are not likely for some time to be built because of insufficient number of members of the church scattered in small groups among the ranches of the South, and the poverty of the people who as yet are pioneering on the southern plains.

The chapel will be driven to little towns along the highways and settlements on the ranches where the priests will hold services among the Catholic people in their midst.

Stops of from one to two weeks will be made in each place. A tent, carried on top of the car, will be erected at each stopping place, thus accommodating as many as 200 persons, and permitting services in all kinds of weather. Stereopticon lectures will be given daily with the aid of a lantern operated electrically by the lighting system on the truck.

The plan of the Extension Society is to use the vehicle not only as an altar for worship, but also for living and sleeping quarters for the traveling priests, a compartment being given over for the latter purpose. The living room is fitted with a cabinet for the personal effects of two persons, lockers



Two Views of the "Chapel on Wheels"

The outfit includes complete altar arrangements: also folding organ, desk and sleeping compartments

for folding cots and bed clothes, drawers for books, stationery, typewriter, cooking utensils and table ware, and for a light supply of provisions.

Another oak cabinet is built in one side of the interior. It contains sections for towels, lavatory and drinking water supplies, a medicine cabinet and a drop-door arrangement to serve as a combination wash stand and typewriting desk. On the opposite side of the interior is arranged a drop leaf with adjustable metal brackets to serve as a general writing desk and table.

The car is known as the Motor Chapel St. Peter. It is of the collapsible type, and when folded in it is no larger than the body of a standard two-ton chassis. When opened it presents almost double the floor space. The exterior construction discloses at a glance the nature of the purpose.

In the ecclesiastical equipment are included a folding confessional and a folding organ, as well as a folding rack fitted with large tubular bells for outside use and a small chime for use at the altar. The body of the car has a length over all of 21 ft., is 6 ft. 9 in. in width and 11 ft. 5 in. in height from the ground to the top of the car.

MERCURY LINE SHOWS LITTLE CHANGE

The Mercury Manufacturing Company, of Chicago, exhibited the Mercury truck chassis, also an express and two panel jobs. The mechanism is practically the same as it has been for nearly three years, in fact, since the first car was laid out. No changes of any importance have been found necessary. The company, however, is offering this season, as an option, Reny magneto in place of the non-vibrating coil jump-spark ignition formerly used. The express body cars are not fitted with fenders as standard equipment, but on the panel jobs fenders are supplied this year as regular equipment. The colors have been changed and the chassis is now red, with green body as standard. Factory equipment has been increased and the company is now manufacturing all of its own parts.

The prices are as follows: Express, \$750; converse panel body, \$850; with wood panel body, \$875; full enclosed body, \$900.

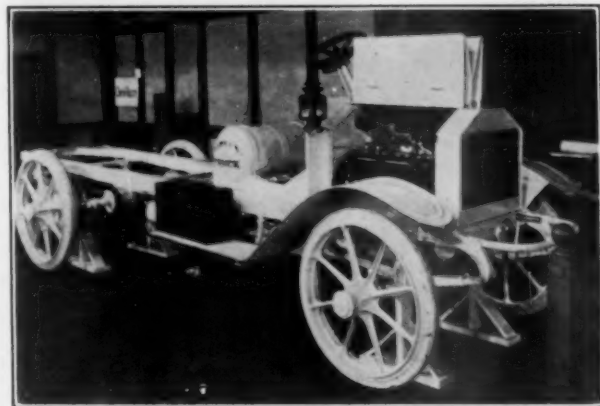
NEW TWO-TON ADAMS MODEL

The Adams Brothers Company, of Findlay, O., exhibited at Chicago their well-known one-ton model and 1½-ton models, and also an entirely new model of two-ton capacity. This vehicle has the same general chassis arrangement of the smaller cars, and sells for \$2500 for the chassis. This car is made only in 140 in. wheelbase. It is fitted with 36 x 4 in. front and 36 x 3½ in. dual rear tires. The general layout is the four cylinder en bloc Adams engine at the front under a Renault type of hood, with the radiator of the vertical tube type virtually forming the front of the dash, this construction being typical of the Adams trucks. The driver's seat has an unusually high back, well upholstered, is wide, and a cab with disappearing side windows and back window, and window front which can be raised and fastened to the roof is provided to give protection for the driver. Drive is through horizontal shafts with Spicer universal joint at the forward end, to a three-speed and reverse sliding gear transmission jack shaft. This is fitted with two contracting band brakes on

the inside of the frame, operated by pedal through single-tree type equalizers. Steering wheel is at the left and control levers at the center. Drive to the rear wheels is by side roller chain. Springs, front and rear, are semi-elliptic. Rear springs shackled at both ends to cast steel brackets at the rear and to a combination jack shaft hanger and shackle bracket at the front. Front springs are shackled at the rear only. Steering gear is of Ross manufacture. Frame is a pressed steel construction, 7-32 in. metal stiffened by five cross frame members, the engine being carried on a frame also of channel section pressed steel. The distance from the back of the seat to the end of the frame is 124 in., giving about 11½ ft. available space for loading. The body width can be whatever is desired, as the platform is above the wheels. There are several standard bodies which can be supplied if desired, but bodies to specifications can be had to suit the purchaser. Ignition is by Bosch dual high tension system. The carburetor is Schebler.

HARVEY AMONG THE NEWCOMERS

The Harvey Motor Truck Works, Harvey, Ill., is making its initial bow with a 1½-ton chassis, to the building of which the entire efforts of the organization are being devoted at present. In its design the Harvey follows generally accepted lines for vehicles of this class, employing a four-cylinder L-



Harvey One and a Half Ton Chassis

head motor and three-speed selectively operated gear-set, with final drive by side chains. One of the features in which it differs from cars of moderate load capacity is the employment of cast steel wheels, for which all the good points of wood artillery wheels are claimed, in addition to the advantage of much greater strength, which is a point of considerable value on any commercial car.

MOON NEW THREE THOUSAND POUND TRUCK

The Joseph W. Moon Buggy Company, of St. Louis, had on view at Chicago a new 3000 lb. commercial car, this being the first commercial car built by this company. They are also making a smaller 1000 lb. pneumatic tired truck, known as Model A, which, however, was not shown. The car shown was of the express type, with a top and cab over the driver's seat. This cab is fitted with side curtains, and a storm front with celluloid window, completely protecting the driver.

The features of the layout are as follows: The engine is a four-cylinder Continental, C type, $3\frac{3}{4} \times 5\frac{1}{4}$ in. under the hood at the front, mounted on four integral crank case arms on the main frame. The clutch is a leather-faced cone. Drive is by shaft fitted with two Hartford universal joints to a three-speed sliding gear transmission jack shaft. The outer ends of this jack shaft are carried in brackets under the frame and fitted with pressed steel drums acting as service brakes, these being of expanding type. Large emergency brakes, also expanding type, fabric-faced, operate on cast drums on the rear wheels.

The steering wheel is at the left, with the control levers at the center. Spark and throttle levers are supplied on the steering wheel. The transmission jackshaft gives three speeds forward and one reverse with selective operation, and is made by the Muncie Gear Works. The frame is of pressed steel, side members narrowed at the front, the forward ends forming spring horns to which the front semi-elliptic springs are attached. The rear ends are shackled. The rear springs are also semi-elliptic, shackled at both ends, the chain distance being maintained by an adjustable cast radius rod. A cross inverted semi-elliptic auxiliary spring is also supplied at the rear, attached to a cross frame member of pressed steel, reinforced with an oak block.

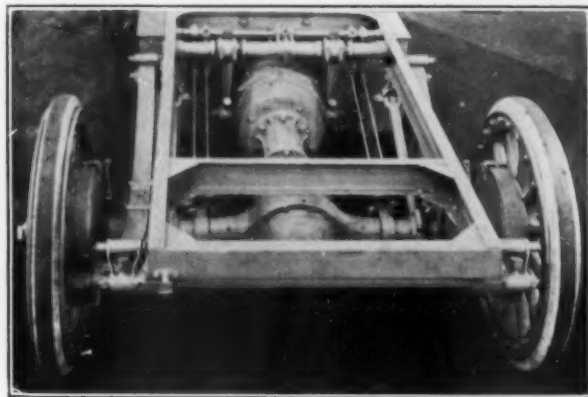
Ignition is by Remy magneto. Cooling by centrifugal pump, and oiling by gear pump. Wheelbase is 125 in., tread 57 in. The front axle is $2\frac{5}{8} \times 1\frac{3}{4}$ in. I-section, rear, $2\frac{3}{4} \times 1\frac{3}{4}$ in. rectangular. The wheels are mounted on ball-bearings, fronts fitted with $36 \times 3\frac{1}{2}$ in. solid tires, and the rear with cellular tires 36×4 in. The road clearance is 15 in.

This vehicle sells with or without bodies as desired, the chassis price being \$1750. Bodies of various types can be had at prices according to the specifications.

BUFFALO ELECTRIC TWO THOUSAND POUND TRUCK

The Buffalo Electric Vehicle Company, of Buffalo, N. Y., exhibited at Chicago a chassis of the Buffalo Electric Company 2000-lbs. light duty truck, with direct shaft drive, with double reduction. A G. E. motor is mounted, or rather hung, in a novel manner, under the center of the frame with its housing bolted directly to an intermediate housing between it and the rear axle. The motor housing itself is surrounded by a band with horizontal trunnions at each side, these being supported on vertical arms from a tubular cross frame member. The upper ends of these arms are not only free to swing on the tubular member mentioned, but are also given a slight lateral freedom, each one being held in position by coiled springs at each side. This supports the motor, yet allows the necessary freedom of motion due to relative motions between the frame and the axle. The drive is of the usual bevel gear type, and radius rods are used at each end of the axle. Springs are semi-elliptic and shackled at each end. Front springs are also semi-elliptic, shackled at the rear only. Large drums on the rear wheels carry internal expanding and external contracting band brakes, fabric faced. These are operated through eveners by pedals at the

front, the steering wheel and controls being at the left. The steering column is braced at the top to the upper part of dash by triangular castings. The steering gear is of Gemmer irreversible type; controller is of General Electric Company's manufacture, and the battery consists of 44 cells of 15 plate, Philadelphia, underslung at the center of the chassis. Edison



Rear View of Buffalo Chassis

Showing method of hanging motor from center frame. The motor housing is bolted directly to an intermediate housing between it and the frame

batteries can be had at extra cost. Fifty miles per charge is guaranteed. Wheelbase is 102 in.; tires $36 \times 3\frac{1}{2}$ in. Chassis sells for \$2200, with lead batteries.

This chassis was also exhibited with a panel body, this outfit being \$2600.

WALKER VERY LITTLE CHANGED

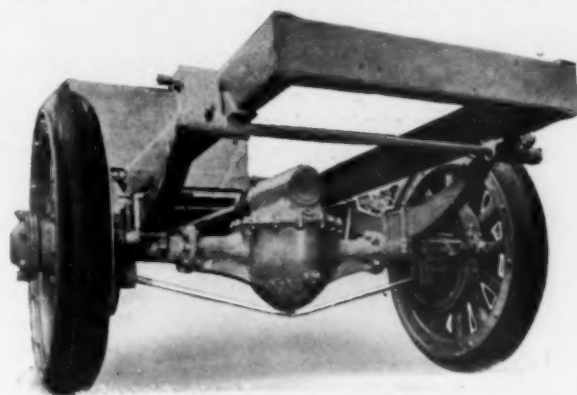
The Walker, made by the Walker Vehicle Company, of Chicago, Ill., is a special type of electric commercial car, with patent balanced drive that has been on the market in successful service for a number of years, and shows few changes in its design. The electric motor is hung in the rear axle and is entirely encased. The driving shafts are extensions of the armature shaft of the motor, terminating at each end in a small pinion, which meshes with two gears. These gears in turn engage an internal gear bolted to the inner periphery of the driving wheel, making an extremely compact motor unit and transmission that has the great advantage of always being in exact line with its drive. The Walker electrics are made in a large range of sizes, from 750 lbs. carrying capacity up to 7000 lbs., and they have the distinction of being employed to a greater extent by one Chicago firm than probably any other single make. This is the house of Marshall Field & Co., which has 107 Walker electrics either in service or on order, the vehicles employed by this firm covering the entire range just mentioned. In addition to this line of models a new type was brought out during the past year and shown for the first time at the Chicago commercial show. This is a 1000 lb. parcel delivery wagon, having half of the battery carried in front and the other half either in or under the body, according to the requirements of the user.

Keep thy trucks and thy trucks will keep thee

DIAMOND T ONE-TON WORM DRIVE

Diamond T Motor Car Company, of Chicago, showed for the first time at Chicago an entirely new, one-ton worm-driven truck. This has an overload capacity of 1000 lbs., and sells for \$2250. The principal feature is the use of the new Timken worm-driven rear axle unit using the well-known English-Brown worm and worm wheel. The worm, as usual in truck practice, is on top, giving a straight line drive for the propeller shaft, which is fitted with two Spicer universal joints.

This assembly is of full floating type, with cast steel housings at the outer ends enclosing the floating shafts, while the center housing of the worm and worm wheel is manganese bronze, giving a very rigid construction. The central housing is flanged to match flanges on the end housings, and the parts are then bolted together. A liberal sized truss rod, with adjusting nuts at the end, is used. The spring seats are on top



Rear of Diamond T Chassis
Showing the David-Brown worm drive

and integral with the housing. Semi-elliptic springs are shackled at the rear to a cross bar carried in supports riveted to the lower frame flange. There are two sets of fabric-faced brakes, the inner being of expanding band type and the outer of the contract band type, operated on a 17 in. pressed steel drum of 3 in. face. The brakes are not enclosed. Short shafts are mounted on the axle housing at the front and parallel to the axle, the outer ends carrying the expanders for the brakes. At the inner end of these shafts are arms with steel pull rods to a cross shaft at the rear of the seat, and with a connection to the brake pedal and center brake lever. The other brake rods are outside the frame. No eveners are used. The drive and torque is through the springs, there being no rods.

The power plant consists of a unit assembly, using the 4-cylinder Continental engine under the hood at the front. The cylinders are $4\frac{1}{2} \times 5\frac{1}{4}$ in., cast en bloc. All valves are enclosed. Ignition is by Bosch high tension magneto with fixed spark. It is mounted on four integral arms of the crank case directly on the frame. The clutch is of Raybestos faced multiple disc type, operating dry. A three-speed selective operated change gear mechanism is carried in the housing, bolted to the engine case. Control levers are at the center, with the wheel at the right, with an option of having it at the left.

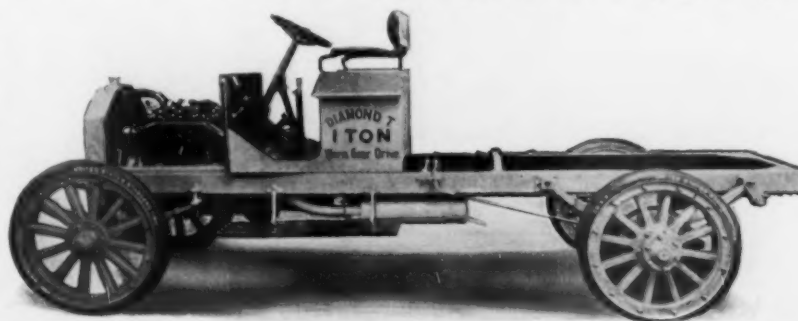
Front axle is I-section Timken construction; wheels mounted on Timken roller bearings throughout. Frame is a pressed steel construction 5 in. maximum depth, $\frac{1}{4}$ in. material, side members being straight and gusseted at the corners. There are four channel section pressed steel cross frame members.

The steering gear is Gemmer, worm and full worm wheel. There are no spark or throttle levers on the wheel, the spark being fixed, while the carburetor control is entirely by foot accelerator. Car is easy of access from either side. The loading space on the chassis shown is 9 ft. 6 in., and the body width can be whatever desired if bolsters bringing it above the wheels are used. The front tires are $36 \times 3\frac{1}{2}$ in. solid and the rear 36×5 . Motor governor can be had at \$25 extra. Bodies are also extra. The liberal use of grease cups throughout the construction is noticeable. The weight is approximately 4000 lbs.

The equipment includes oil, side and tail lamps, full kit of tools and jack.

COMMERCE WITH FRICTION TRANSMISSION

Experience has demonstrated that the friction type of transmission is a success on light and medium weight vehicles, and advantage has been taken of this fact to simplify that essential of the line of light commercial cars being placed on the market by the Commerce Motor Car Company, of Detroit, Mich., which is a comparatively recent addition to Detroit's constantly growing list of manufacturers. Four models are listed, three of which, the Models "A," "C" and "H" are of the 1000 lb. delivery wagon type, and the fourth, Model "K," is a 1250 lb. capacity light truck. The last-named is a new addition to the line. It is equipped with a four-cylinder vertical $3 \times 4\frac{1}{2}$ in. L-head block-cast Northway motor, rated at 20 h. p. The motor accessories are a Bosch high tension magneto, operating at fixed sparking position, Lavigne force-feed oiler and a Schebler carburetor. As in the earlier $\frac{1}{2}$ -ton models, drive is by friction disc and wheel through a single chain to the rear axle, the disc shaft being attached to the fly-wheel of the motor by a flexible coupling to reduce the starting stress. The forward axle is of the tubular type, with a liberal drop in the center, while the suspension consists of four semi-elliptic springs hung on swinging shackles; wheel-base is 102 in. Frame of pressed steel construction, heavily braced and reinforced. Twelve-spoke artillery wheels, running on large ball bearings forward are equipped with either $32 \times 3\frac{1}{2}$ in. Goodyear pneumatics, or $34 \times 2\frac{1}{2}$ Goodyear-Motz truck solids, at the option of the purchaser. The steering gear is a worm and split-nut type, double buffer springs being em-



The Diamond T One-Ton Chassis

played in the connections. Drive is at the left, with the usual single lever control of the friction transmission. The list price of the chassis is \$875, including three combination oil and electric lamps, wind shield, electric horn, Willard L. B. A. storage battery, pump, tools and tire repair kit, where pneumatics are employed. Open express bodies are supplied for this chassis at \$75; full panel type with rear door or end gate \$100, also stake bodies with canopy top and full side curtains at \$100.

The 1000 lb. chassis is also equipped with a 20 h. p. motor and lists at \$750; with express body it sells at \$800, and with either a full panel or a stake body, with canopy top, it sells at \$875.

THE CLARK ONE AND A HALF TON

The Clark Delivery Car Company, of Chicago, exhibited at Chicago Show the standard Clark chassis of 1½-ton capacity, also the same chassis fitted with a special millwork body arranged so that long pieces of lumber, interior trim, etc., can be carried on the sides, extending beside the front seat, doing away with a long overhanging load at the rear. On each side of the central portion of the body are extensions with stakes at the outer edge, these extensions running forward as far as the radiator. Beneath these on the sides are long, spacious tool boxes, which reach from front to the rear mud guards.

The changes in the Clark models are very slight, consisting principally in new rear axle assembly and a new radiator. The radiator is of the vertical, unflanged, copper tube type, with cast aluminum ribbed head forming a tank. All the inlets and outlets are cast integral with the head or base. A novel construction for spreading the incoming water and forcing it to distribute itself uniformly through the tubes consists of an integral cast tube on the inside of the head. This is perforated throughout its length and incoming water enters it and is distributed through the perforations, giving an equal flow down through the cooling tubes. These tubes are inserted at the head and base in a similar manner to boiler tubes, being roller expanded, beaded and prossored, that is, expanding just below the bottom plate of the head, in addition to being soldered. The radiator is three point mounted on



Front End of Clark Truck

Showing the new copper tube radiator with cast aluminum head. Tubes are without flanges. A special water-distributing device is cast integral with the interior of the head.

springs at each side, and at the top center point on a vertical swivel attached to the dash, relieving it of all strains due to weaving the frame.

The new rear axle is a full floating type, Rhineland annular ball bearings used throughout. A short stiff propeller shaft housing is ball-joint mounted in a casting on a cross-frame member and from each end of the axle rods with universal joint mountings at the forward ends form a triangular structure. The rear ends are hinge-jointed to the spring seats below the springs, permitting greater flexibility than the solid ends. The drive is through the usual propeller shaft and bevel gears, using a bevel gear differential, the reduction being 6.2-3 to 1. A change has also been made in the brakes. Instead of internal expanding and external contracting bands on a single drum, the drum casting is now made with two concentric faces and both brakes are internal expanding on these two surfaces. With the chassis loaded the construction gives a straight line drive.

The general layout is four cylinder en bloc Wisconsin motor at the front, 30 h. p. multiple disc metal to metal clutch and three speeds and reverse sliding gear transmission, these members being mounted on a sub-frame. The engine is under the floor boards, which are slightly raised at center, giving loading space of 9 ft. back of the seat, by 5 ft. width. Price of chassis is \$2000.

MOGUL SHOWS A NEW SIX-TONNER

Mogul Motor Truck Company, Chicago, Ill. Since making its initial bow at the Chicago Show a year ago with a single four-ton model, this company has added a six-ton type, a number of which have been placed in service in the Windy City during the past half year. The power plant of this new comer is a Continental T-head 5¼ x 5¼ in. motor, with its cylinders cast in pairs, driving through a 14 disc dry plate clutch of the Palmeto type to a three-speed progressive gear set, the housing of which is carried on a three-point suspension. The shafts are mounted on imported annular ball bearings and the thrust of the bevel pinion is taken on a special ball thrust bearing. The motor is located under the driver's seat, but the honeycomb radiator, which is spring mounted, may be swung outward by removing two bolts. Double ignition is provided, the high tension magneto and the battery and coil systems being independent. Final drive is by side chains from the jack shaft, both sets of brakes being placed on the driving wheels. They are placed side by side, both being of the internal expanding type in 20 in. drums of more than 7 in. face. The front axle is a Timken I-beam, fitted with Timken roller bearings on the steering spindles and wheels, while the rear axle is a solid 4 in. square of nickel steel.

The frame is of heavy rolled channel section steel, hot riveted and well braced by cross members and gusset plates, the frame section being 7 in. deep. Over all it measures 20 ft. 6 in., while the loading space is 14 ft. 6 in. The wheelbase is 155 in., and the artillery wheels are equipped with 36 x 6 in. tires forward, and 40 x 6 in. dual endless demountables at the rear. Semi-elliptic springs are employed at all four points of the suspension, measuring 50 x 4 in. in front and 56 x 4 in. in the rear. The majority of the Mogul trucks placed in service during the past year have been purchased either by brewers or by lumber dealers, and for the latter a special chassis of the 6-ton model is built, having a clear loading space

of 16 ft. This, as well as the standard size Mogul trucks for lumber service, are equipped with the patented roller bed, by means of which the entire load may be taken on from a dummy loading truck in a few minutes, and dumped by one man in an equally short time, without disturbing the stacking.

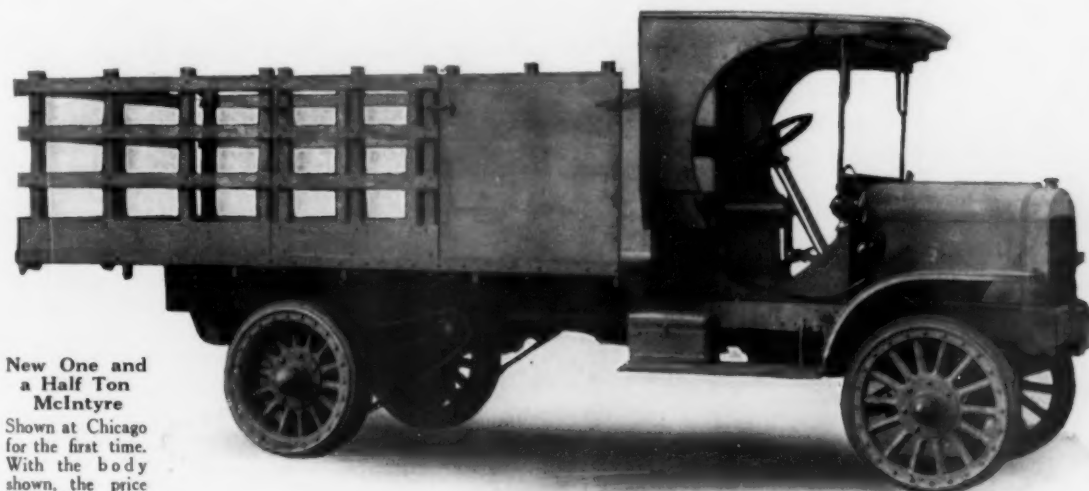
The Model O, Mogul four-ton truck has undergone practically no change since it was exhibited a year ago. It is fitted with a Continental 5 x 5 3/4 in. motor, and its essential features are along the same lines as the larger machine, the differences only being those of dimensions. The frame is a 6-in. channel, measuring 18 ft. 2 in. over-all, and having a loading platform slightly over 12 ft. long. The wheelbase is 142 in., and the tire equipment 36 x 6 in. front, and 40 x 5 in. dual in the rear.

McINTYRE ADDS NEW MODELS

W. H. McIntyre Company, of Auburn, Ind., exhibited at Chicago, the 1 1/2-ton chassis. Many changes have been made in this since last year. One of the principal changes is the use of the Continental motor instead of the Somers formerly

from this point to the rear wheels by side roller chains. The motor is under the hood at the front, twelve feet being available back of the driver's seat for loading space. Another change for this year is the center control levers, the wheel still being at the right. Ignition is either by Briggs or Bosch dual system. Carburetor is Stromberg. Spark and throttle controls are on quadrants on the steering column beneath the wheel. Instead of the 3/4 platform springs of last year, semi-elliptic springs are now used, with an inverted cross semi-elliptic spring as an auxiliary. The radiator is of vertical tube type, and this year is mounted between springs. The starting crank has been arranged to fold under.

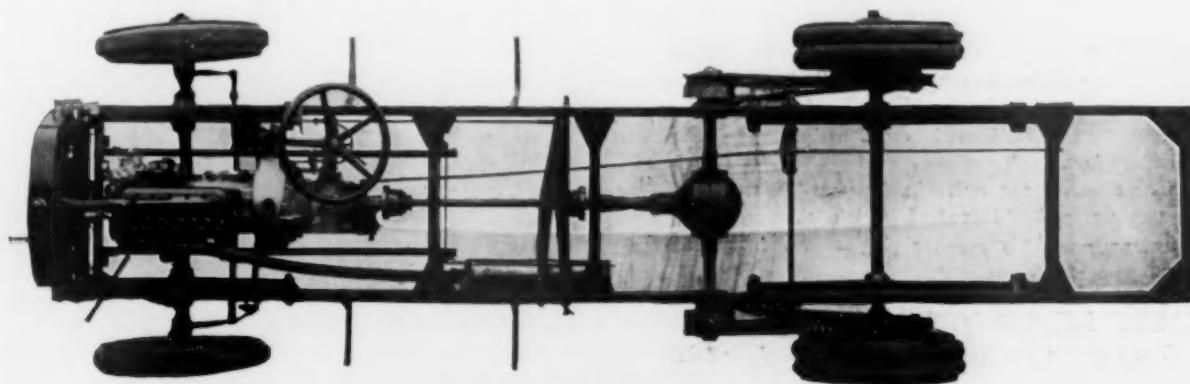
The wheelbase is 144 in., wheels fitted with 34 x 4 1/2 in. front tires and 36 x 3 1/2 in. dual rear tires. The frame is of heavy channel section structural steel, liberally braced with cross frame members and gussets. Both brakes are on the rear wheels as in former models, and operated through full-frame-width eveners. The Ross steering gear is still used, but of larger size than formerly. The steering wheel has also been changed from 18 in. to 22 in.



New One and a Half Ton McIntyre
Shown at Chicago for the first time. With the body shown, the price is \$2475.

used. The engine is of four cylinder en bloc type, forming with the dry multiple disc clutch and three-speed Brown-Lipe transmission a unit, supported on three points. Drive to the jack shaft is by shaft fitted with two Spicer joints and

The chassis sells for \$2300. Bodies extra according to specifications. Three new models have also been added to the line, a fifteen hundred pound, a three and a five-ton. These were not shown at Chicago.

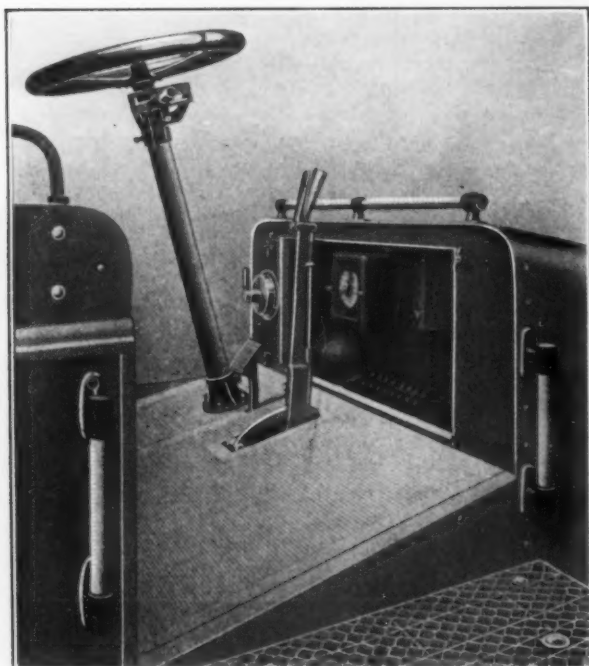


Plan of McIntyre Chassis

This truck is unusually staunch in construction for a ton and a half model. The power plant is of unit type, using the Continental four-cylinder en bloc motor 4 1/2 x 5 1/2, fitted with an automatic governor, which can be set at any desired engine speed, 1600 r.p.m. being recommended for this model, corresponding to about fifteen miles road speed.

URBAN ELECTRIC EXHIBIT

Kentucky Wagon Manufacturing Company, of Louisville, Ky., exhibited at Chicago its electric trucks known as the "Urban." The general description of this vehicle was published in the September, 1912, issue of the *COMMERCIAL CAR JOURNAL*. The general layout is Hycap exide battery, under-slung at the forward end, General Electric Company motor mounted on cross frame member, and driving forward to an under-slung jack shaft by Reynold silent chain. Side roller chains transmit the power from this point to the rear wheels. The wheel is at the left, with the brake levers of the gasoline car type at the center, and the control lever under the steering wheel on the column. A novelty in construction consists in housing the controller mechanism inside of dash. By removing a cover plate the entire mechanism is at once made accessible. The construction also adds to the appearance of the machine.



Dashboard With Cover Plate Removed

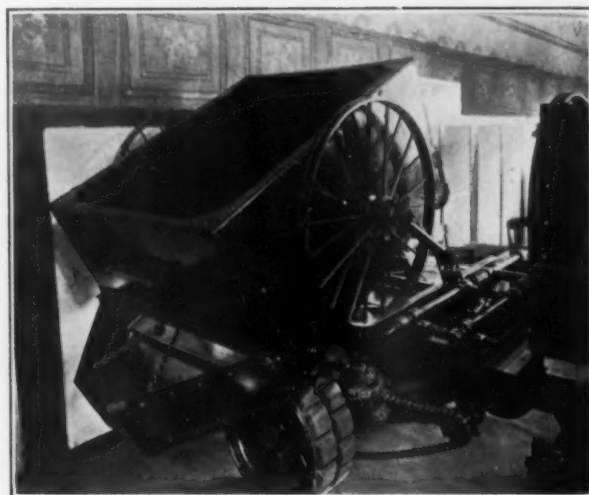
The controller mechanism is housed under the dash. The control lever is mounted underneath the steering wheel

The rear springs are long, semi-elliptic and the shackle bolts are bushed and fitted with grease cups. The frame is of heavy pressed steel, well braced and trussed underneath the battery box.

These trucks are made in four models, 1000 lb., one ton, two ton and 3½ ton, of which the 1000 lb., with paneled delivery body and the chassis of the two ton were shown.

LANSDEN EXHIBITED NEW DUMPING BODY

The Lansden Company, of Newark, N. J., exhibited at Chicago an entirely new and novel dumping body on their regular six-ton chassis. This vehicle has two metal hoppers or tilting bodies, each capable of holding 2½ tons of coal or 3 tons of cement or sand. Each of these bodies is mounted



Manner of Dumping Lansden Truck

on a set of iron wheels some 4 ft. in diameter. By means of a hand crank operating a worm and worm wheel, these bodies are rolled to either side of the truck, angle irons forming the track, and when the gates at the end are released they automatically dump by gravity. The feature of this truck is the fact that four of these bodies comprise the outfit. The empties can be rolled over a truck on to a specially adjustable height rack which can be fastened to a coal car or stone car. The full box can then be rolled directly on to the truck, the complete operation taking in the neighborhood of eight minutes, so that the power unit is kept constantly moving, this, as is well known, being the keynote of efficiency in the use of any motor-driven unit. The outfit was designed especially for coal handling, for cement, crushed stone, sand and contractors' materials.

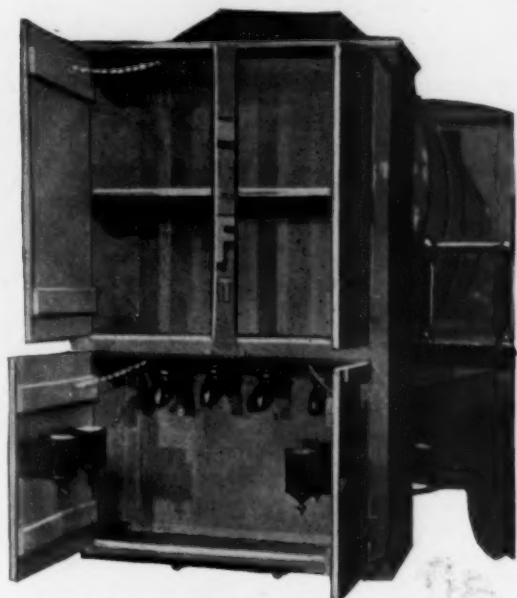
AVERY COMPANY SHOWS TWO NEW MODELS

In order to market a line of trucks covering a wider range of load capacities, the Avery Company, of Peoria, Ill., showed two new models at the Chicago show, the line now comprising the Model "A" tractor, which has undergone a few minor changes since last year; the "B," three-ton, and Model "C," one-ton, both of which are new, and the Model "B," in two and five-ton sizes. The changes on the Model "A" consist of the adoption of the automatic ignition advance type of Eisemann magneto, the use of a governor on the motor, and a spring mounting for the radiator. One of the most impressive vehicles of the Avery exhibit was a Model "B" five-ton truck, with a 2500 gallon oil tank built on it. This was equipped with Ward-Leonard electric lighting system, and in addition to the usual side and rear lights, electric light was also provided in the closet at the rear housing, which is fitted with various cocks for drawing off oil.

The new Model "C" one-ton size differs from the larger sizes of the same make in having its 30 h. p., four-cylinder motor carried under a bonnet forward, instead of under the driver's seat as in the various sizes of the Model "B." The motor is of the block cast type, with 4⅞ x 5¼ in. cylinders.

A plunger pump feeding the oil through sight gages takes care of the lubrication, while a centrifugal pump and tubular radiator provide the cooling. The remaining motor accessories are a Rayfield carburetor and a dual system of ignition provided by a Remy magneto and storage battery. A dry plate clutch, having 14 steel discs, is employed, the alternate plates being faced with Raybestos. This drives through a three-speed and reverse selective sliding gear to a Timken

steel channel frame, measuring 16 ft. 7 in. over all, and having a loading platform 6 x 12 ft. in the clear. The tire equipment is 38 x 5 in. front and 38 x 4 in. dual rear, S. A. E. Standard demountable type. The service brakes are on the jack shaft and the emergency on the driving wheels, and are unusually liberal in dimensions, the total frictional area of both sets amounting to 475 sq. in., the service brake drums being 11½ in. diameter, of the contracting type, and the emergency 19 in. diameter, of the internal expanding type. The net weight of the chassis is 6250 lbs., and it lists at \$3200.



Novel Cabinet at Rear of Avery Tank Wagon
The shelves above are used for cans. Note drip cans on lower doors

jack shaft, and from the latter through side chains to the rear wheels, the sprockets giving speeds of 4½, 7¾ and 15 miles ahead.

A 5 in. steel channel frame forms the foundation of the car, and is carried on a semi-elliptic spring suspension with an auxiliary spring at the rear. The tire equipment consists of 34 x 3½ in. front and 34 x 4 in. rear, both being single tires. The net weight of the chassis is 3770 lbs., and it lists at \$1690.

The Model "B" three-ton Avery, which is also a new-comer, shown for the first time at Chicago, is along substantially the same lines as the smaller machine just described, except that like the other sizes of this model, it has the power plant carried under the driver's seat. The 4¾ x 5 in. 45 h. p. motor is mounted on a sub-frame carried on a three-point suspension. The ignition system consists of a storage battery with Eisemann coil, and an Eisemann dual automatic spark advance high tension magneto. A Schebler carburetor takes care of the fuel supply, and it is fitted with a throttling governor, which, however, may be cut out by the hand control. The clutch is a multiple disc, having 11 steel plates running in oil, a clutch brake being provided to prevent spinning when disengaged. The motor is governed to run at 1200 r. p. m., and at this speed gives forward speeds of 4, 7 and 13 miles through a three-speed selective type gear, Timken countershaft and double side chains, of the detachable link type. The front and rear axles are both of Timken make, and Timken roller bearings are used throughout. Suspension is by semi-elliptic front, and the same type at the rear, with a heavy auxiliary cross spring. They support a 7 in. pressed

IDEAL FITTED WITH A NEW GEARLESS TRANSMISSION

The Ideal Auto Company, of Fort Wayne, Ind., exhibited at Chicago their one and two-ton models, the two-ton being a new model this year. The general chassis arrangement is about the same as on the other car, the weights of the various parts, of course, being suited to the load capacity. The new features which attract the attention are the differential without gears. This differential is being marketed by the Wayne Auto Axle Company, of Fort Wayne, Ind. It is entirely different from anything that has heretofore been shown in the way of a differential. In place of the usual gears, metal expanding clutches, acting against metal, giving the driving forms, these running in oil. The usual sprocket or bevel gear or worm and worm wheel or any of the other forms of drive can be used, but the differential part of the center is entirely without gears, as mentioned. The arrangement is as follows: The rear axle shafts, at their inner ends, each engage a drum either by squared fit or splined fit. These two drums correspond in action to the two large bevels of the ordinary differential. In each of these drums, however, are two metallic blocks or shoe clutches, which, when expanded from the center by a cam shaft piece, attached to and driven by a large



Ideal Truck Fitted With Wayne Gearless Differential

bevel gear, grip the before-mentioned drums by frictional engagement, and drive the wheels through the rear axle shafts.

The construction is briefly as follows: There is a central plate with a cam shaped hub projecting out of each side as represented in the diagram at BB. This plate with its cam-like hubs is directly connected to the large bevel, if the rear axle is bevel gear driven, or to the sprocket or worm wheel, if chain or worm driven. This central plate therefore may be considered as the driving member. On each side of it are drums CC which correspond in action to the two large bevels on the ordinary bevel gear differential. Each of these has a splined hub, and drives, by means of splined ends, the two

parts of the live axle, each of which rotates one of the rear wheels of the truck at its outer end. Inside of each of these drums C are solid metal pieces DD, which can be expanded outward against the drums, by the cams DD, similar to the action of an expanding shoe brake. When the central plate is driven forward, cams BB expand clutches DD, gripping the drums BB, and forcing the shafts and wheels to rotate with the central plate. As soon as one wheel, let us say the wheel

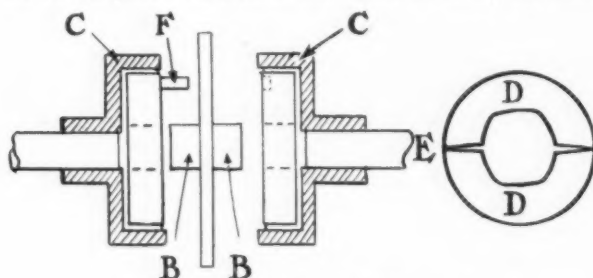
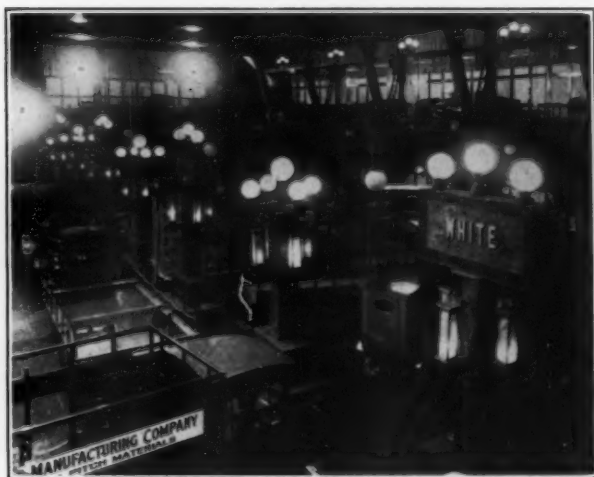


Diagram of the Wayne Differential

at E, is going around the outside of a curve, as in turning a corner and begins to rotate faster than the other wheel, the drum C rotates faster than the clutch DD within it, which therefore releases the clutch, and the entire drive is taken by the other, or slower moving wheel. To prevent the clutches from moving too far backward when freed, a pin F integral with the clutch shoe on one side, and which projects through a hole in the central plate into a slot in the clutch on the opposite side of the plate, brings up against the end of that slot, preventing any further backward motion of the clutch that is free.

The entire front structure, with the raised seat over the engine, is now of steel. It was formerly wood. The vertical frame tube radiator is now spring suspended. For this year double annular New Departure ball bearings are used in the wheels and jack shaft, these being of such a size that they are interchangeable with any of the standard ball or roller bearings.

In all models the engine is under the raised seat; a cone clutch is used, and a three-speed sliding gear transmission jack shaft with drive by side roller chains to the rear wheels. The



Truck Exhibit in the Armory

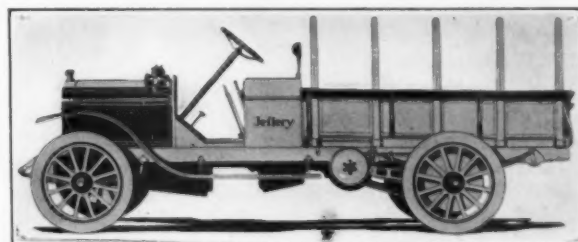
General view of the truck exhibit in the Armory, at the Chicago show. Also showing accessories in gallery on one side

rear springs are $\frac{3}{4}$ platform, frames pressed steel, with pressed steel cross frame members. Auxiliary cross inverted semi-elliptic springs are also fitted. The two-ton tires are 36 x 4 in. front, and 36 x $3\frac{1}{2}$ in. dual rear, with an option of 36 x 6 in. at rear.

The one-ton chassis sells for \$1800, and the two-ton for \$2500.

THE JEFFERY MODELS

Thomas B. Jeffery Company, of Kenosha, Wis., showed for the first time two new commercial cars which have just been added to the line. These were shown for the first time at Chicago. They are 1250 lbs. and one-ton capacity, respectively. A two-ton truck is also being placed on the market but was not shown. These are known as the Jeffery delivery wagons. These two cars are entirely different in chassis design, although both have four cylinder motors, $4\frac{1}{2}$ x $4\frac{1}{2}$ in. cylinders, cast separately under the hood at the front. Leather faced cone clutch and three-speed selectively operated sliding gear or Rambler construction. The smaller car, however, is shaft driven to the regular Rambler floating axle. The other model has the change speed mechanism connected with the jack shaft, and from this point back the construction is Timken. Frames in both cases are of pressed steel, of course, of different weights. The smaller truck is mounted with regular

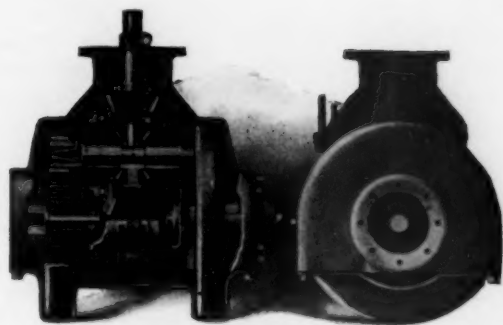


The Jeffery One-Ton Truck

equipment on 34 x $4\frac{1}{2}$ in., either U. S. or Goodyear tires, quick detachable rims. The wheels are demountable, following the well-known Rambler practice. The wheelbase of the small car is 120 in., and on the one-ton model is 126 in. The loading platform on the 1250 lb. truck is 78 x 48 in. On the larger car, 48 x 96 in. The chassis overall length on the one-ton is 189 in.; tires 34 x 4 in. on the rear, 34 x $3\frac{1}{2}$ in. front. Ignition on both cars is Remy dual system. All controls are at the right. Both machines have semi-elliptic springs at the front, but the small car has full elliptic scroll end springs at the rear. Its brakes are of internal expanding and external contracting type on the rear wheel drums, while on the one-ton model there is a set of contracting brakes on the jack shaft drums at the outside, and on the rear wheels a set of internal expanding brakes. The chassis prices are \$1250 for the 1250 lb. car and \$1500 for the one-ton.

THE LINDSAY INTERNAL-GEAR SHAFT DRIVE

T. J. Lindsay, of Indianapolis, Ind., showed for the first time an entirely new internal gear shaft drive in rear axle, especially for trucks, of either gasoline or electric type. The mechanism is somewhat novel, and is entirely new in its arrangement so far as the writer is aware. The rear axle is full floating, and of the unit type. An aluminum case at the cen-



Lindsay Internal-Gear Driving Unit
Removable from housing at center of rear axle

ter houses not only the ordinary bevel spur pinion and bevel gear with differential, mounted in a steel caging, but also two spoked internal gears with slotted hubs, each of these gears engaging small pinions at each side of the differential. When this unit is telescoped into the aluminum rear axle housing, the slots in the hubs of the internal gears engage suitable shaped ends of the full floating axles, so that these axles are driven when the internal gears are rotated. The usual tubular housing encloses the floating shafts, and the spring supports are on these housings. The opening of the housing is at the back, and by removing the cover the entire unit, including the bevel gears, differential, spur and internal gears, can be drawn out without in any way interfering with any other part of the rear axle assembly, leaving everything in place. This mech-

anism supplies an internal gear driven rear axle with any desired reduction, the whole running in lubricant in an oil and dust-proof case.



Structural Steel Truck

Novel arrangement is here shown, as exhibited on the White truck, making it possible to carry very long structural steel beams, etc., without an excessive overhang at the rear.

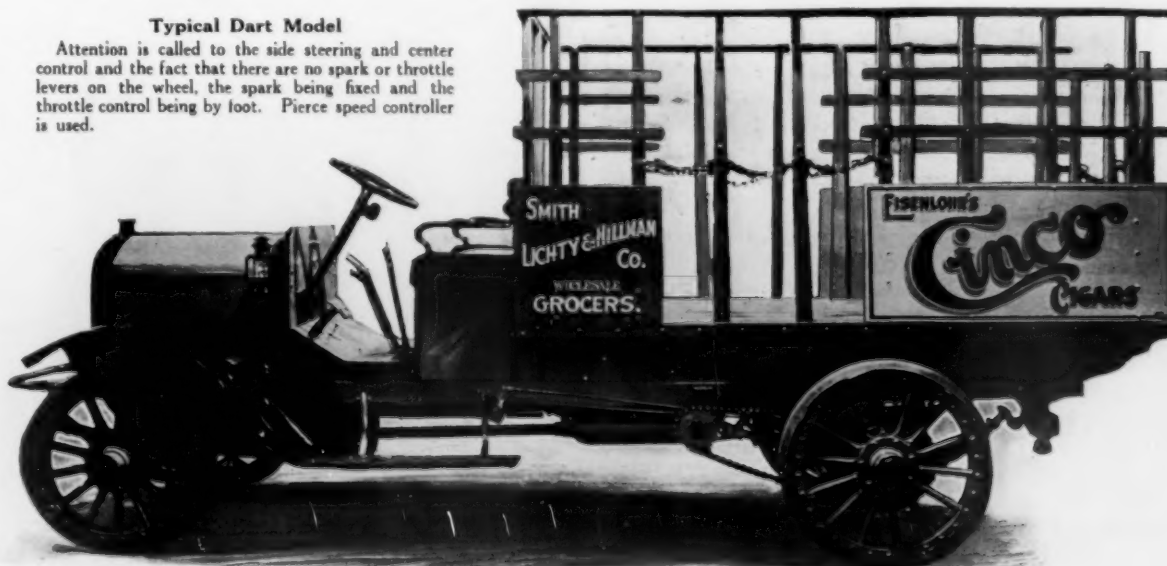
Dart Manufacturing Company's New Models

The Dart Manufacturing Company, of Waterloo, Ia., has been showing at the National Shows the new models for this coming season, ranging in carrying capacity from 500 lbs. to 3000 lbs. The smallest model is rated as 500-750 lbs. capacity, and sells for \$575. Its chassis weight is 1700 lbs., and a carrying space of 44 x 72 in. is available. The loading platform

height is 50 in., and the car is capable of a maximum speed of 16 miles per hour. It is of the two-cylinder type, 4¼ in. bore x 4¾ in. stroke, rated as 14.45 h. p. by the S. A. E. formula. The engine is located under the seat on the main frame. The mixture is cared for by a Marvel carburetor, ignition by Remy magneto; in fact, Remy ignition is used on all of the models

Typical Dart Model

Attention is called to the side steering and center control and the fact that there are no spark or throttle levers on the wheel, the spark being fixed and the throttle control being by foot. Pierce speed controller is used.



except the largest car of 2000-3000 lbs. capacity, which is fitted with the Eisemann automatic system, this having storage batteries as an auxiliary, while the other cars have dry cells. The little car has two sets of brakes, expanding Raybestos faced on the rear wheel drums, which are 10 in. x 2½ in. face; jack shaft brakes of 10 x 2 in. Raybestos lined are also supplied, giving an unusually large braking surface for this small car. The tires are 36 x 2 in. The springs are full elliptic, front and rear, and wheelbase 86 in.

1250 lb. Truck

The next largest car is of 750-1250 lbs. capacity, and the chassis sells with 3 lamps, tools, seat box, horn, etc., for \$750. This car has a four-cylinder, 3¼ x 4 in. motor, cast en bloc. The engine is three-point suspended on the main frame under the hood at the front. A Stromberg carburetor is used on this car, and also on the two larger models. Sliding gear change speed mechanism, giving two speeds and a reverse is used. This model is put out either with a shaft drive and bevel gear rear axle, or with side chains and a dead rear axle. The brakes are similar to the smaller model; tires 34 x 2½ in. front and 36 x 2½ in. rear. The steering wheel is at the left and the control levers at the center on all Dart models. The wheelbase of this model is 108 in.; the loading space 44 x 78 in., with a platform 50 in. above the ground.

Simple Control

No spark or throttle levers appear on the wheels of any of the Dart models, the spark being fixed, and the throttle being entirely operated by foot, making the cars simple of

operation. This system together with the Pierce controller, which limits the 3000 lb. car to 16 m. h. p., makes it practically impossible for the driver to damage the truck by overspeeding. On this large model an electric starter can be had as an extra, if desired.

The \$950 and \$1800 Dart Models

All Dart prices are given on the chassis only, the \$950 chassis having a capacity of 1250 to 2000 lbs., and a carrying space of 48 x 85 in., with an 18 in. overhang and 50 in. platform. The maximum speed in 18 m. p. h., Pierce speed controller being used. The motor is of four-cylinder type, of 3¼ x 5 in., cast en bloc, as are all of the Dart engines with the exception of the two-cylinder. This car, and the largest model, which has a capacity of 2000 to 3000 lbs., sells for \$1800 for the chassis, are practically the same in general design, the only difference being in the size of the motor, and some of the driving parts, brakes, etc. Both are side chain driven; the smaller car has 12 x 2½ in. Raybestos faced brakes on the rear wheels, and the larger one 12 x 3 in. The transmission in each of these is of three-speed sliding gear type, selectively operated, the levers as before mentioned being at the center, with the steering wheel at the left. The tires on the 2000 lb. car are 34 x 2½ in. front, and 38 x 3 in. rear, and are mounted on Goodyear side flange rims. A 16 gallon gasoline tank is located under the seat, with three gallons in reserve, and on the largest model an 18 gallon tank, with 5 gallons in reserve. The springs are semi-elliptic front and rear.

Wichita One and Two-Ton Models

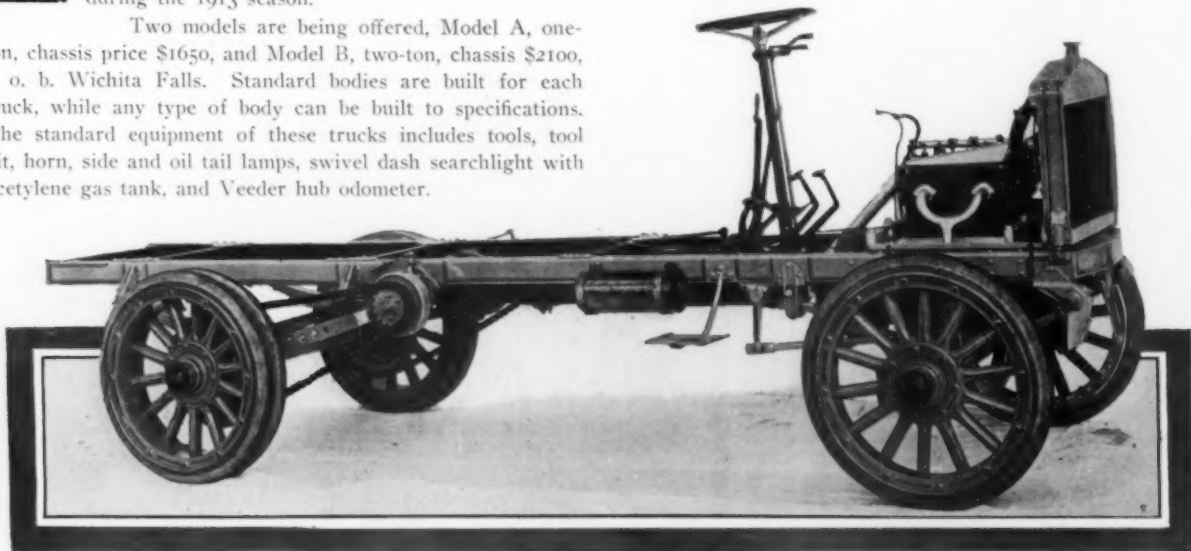


THE Wichita Falls Motor Company, of Wichita Falls, Tex., announces that its product is in use in large numbers on the Pacific Coast, throughout the Southern States, Old Mexico and Cuba, and that it is arranging to turn out more than 500 machines during the 1913 season.

Two models are being offered, Model A, one-ton, chassis price \$1650, and Model B, two-ton, chassis \$2100, f. o. b. Wichita Falls. Standard bodies are built for each truck, while any type of body can be built to specifications. The standard equipment of these trucks includes tools, tool kit, horn, side and oil tail lamps, swivel dash searchlight with acetylene gas tank, and Veeder hub odometer.

The Wichita Motor

This motor is designed particularly for truck service and is built complete in the Texas factory. The motor is of the L head type with cylinders cast en bloc, suspended from four points. The bore is 3¼ in. and the stroke 5 in. The crank



The Wichita Falls Chassis, One Ton Capacity

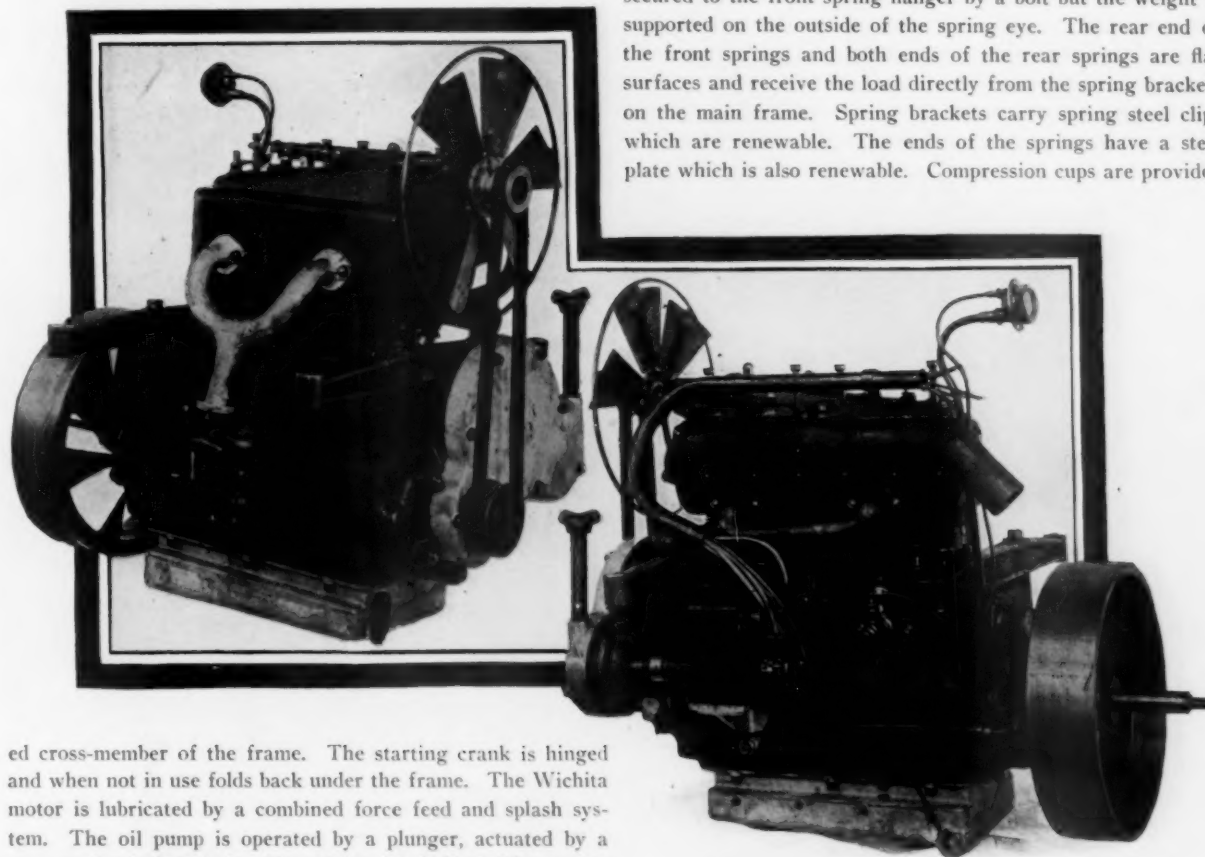
shaft is $2\frac{1}{4}$ in. in diameter and has specially constructed end bearings. The shaft is turned down at the ends and hardened steel sleeves are pressed on and then ground to a true center. This provides a hardened bearing, which is easily renewable. The connecting rods are of generous length and are drop forged I-beam construction. The timing gears are helical, a special gear being provided for driving the magneto. Cooling is by water, assisted by an unusually large radiator, which absolutely insures perfect cooling. The radiator is spring suspended and protected from accidental injuries by the curv-

steel channel section with straight side members. The front cross member acts as a bumper projecting about six inches in front of the radiator at the center.

The standard wheel base for the one-ton model is 110 in. and for the two-ton model 118 in. Additional wheel base length up to 144 in. is provided for.

Springs and Wheels

The springs, front and rear, are semi-elliptic. No spring shackles are used. The forward end of the front spring is secured to the front spring hanger by a bolt but the weight is supported on the outside of the spring eye. The rear end of the front springs and both ends of the rear springs are flat surfaces and receive the load directly from the spring brackets on the main frame. Spring brackets carry spring steel clips which are renewable. The ends of the springs have a steel plate which is also renewable. Compression cups are provided



Intake and Exhaust Sides of the Wichita Motor

ed cross-member of the frame. The starting crank is hinged and when not in use folds back under the frame. The Wichita motor is lubricated by a combined force feed and splash system. The oil pump is operated by a plunger, actuated by a cam on the timing shaft. The oil level is indicated by a gage on the crank case. The carburetor is provided with a hot air intake and a special dash adjustment. Ignition current is furnished by high tension magneto and the purchaser has the option of single or dual equipment. The clutch is of the cone type, provided with a leather facing. This facing is held in place by T bolts which are pressed below the face of the cone. No rivets are used to hold the facing in position. Adjustable springs are provided at intervals under the clutch facing, which prevent the clutch from grabbing. The clutch spider is in an aluminum casting. Three speed and reverse transmission is used which is bolted to the jack shaft housing. The transmission and jack shaft have three point suspension. The propeller shaft is located between the transmission and the clutch and is provided with two universal joints.

Axles and Frame

The Wichita axles are drop forged; the front are I beam section and the rears rectangular. The frame is a pressed

for lubricating the surfaces of the spring plates. The radius rods are rigidly constructed and are provided with drop forged yoke ends. The adjusting nuts are at the forward ends. The wheels are artillery type with square spokes, fourteen to the wheel. The wheels are provided with S. A. E. bands to receive standard demountable tires.

Steering

Steering gear is of the worm and wheel gear type; the steering gear being located on the right and is provided with an outside type of spark and throttle control. A foot accelerator is also provided. The Wichita gear shift is located in the center of the car and is provided with long levers that are easily accessible. The jack shaft brakes are operated by a foot pedal and the emergency brake by a brake lever located alongside the gear shift lever.



MOTOR TRUCK CLUB DISCUSSES SHOW SITUATION

At a well attended meeting of the Motor Truck Club, at Rector's, 1845 Broadway, New York City, on Wednesday, February 19, the subject, "Do Motor Truck Shows Pay?" was under discussion.

President Fenner called for speakers on the subject of the evening, and A. J. Slade was the first to respond. The views of nearly all were heard, and the consensus of opinion was that the shows as now run do not pay. There was apparently a desire on the part of the members for some kind of an outdoor show. This was particularly advocated by Shadbolt, the well-known body builder. President Fenner suggested competitive events, in which special loading, unloading and other devices could be shown. E. S. Foljambe, editor of the COMMERCIAL CAR JOURNAL and AUTOMOBILE TRADE JOURNAL, brought to the attention of the meeting the suggestion of these papers that there be but one national automobile show, and that held in the early fall. At such a show the dealers and manufacturers could get together, and competition and all kinds of demonstrations of the newest features to increase the efficiency of the motor truck chassis could be demonstrated. It was suggested that the national convention of dealers might be held at the same time, thus saving the industry the expense and loss of time of separate trips.

A truck parade was suggested for April, and steps were taken to prepare for this event. The secretary was instructed to suggest to the N. A. A. M. the advisability of having truck parades held all over the country on the same day, each of these under the guidance of the local dealers.

SAN FRANCISCO MOTOR TRUCK SHOW

The Motor Car Dealers' Association of San Francisco, Cal., proposes to show this year, a most complete exhibition of every American made motor truck, at its First Annual Motor Truck Show. This initial exposition is to be under the management of Motor Field, with G. A. Wahlgreen in charge, and it will be held in Coliseum Hall, San Francisco, April 1st to 6th.

AUTOMOBILE DEALERS' ASSOCIATION, of Buffalo, N. Y., will hold the first exhibition devoted entirely to commercial cars, in Buffalo, on March 11th to 15th, in the Broadway Auditorium.

**KNOWLEDGE OFTEN VEXETH THE SPIRIT
FOR EXAMPLE THE STANDARD
CAUTION PLATE ON THE TRUCK.**

SAN FRANCISCO MOTOR TRUCK CLUB ACTIVE

The Motor Truck club recently formed in San Francisco, Cal., is going to be an active factor in the commercial car industry. Monthly dinners are held at which are held practical discussions of commercial car problems. A subject is selected for each month's discussion, but in addition experiences and practical ideas are exchanged on any other subject. At the last meeting the regular subject was "tire troubles," and a practical device to insure pulling a truck out of any bad hole, invented by LeRoy Jones, of the Los Angeles Gas and Electric Corporation, and another to help in bad going, devised by W. Woods of Glendale, were explained to the club members and placed at their disposal. Another "wrinkle" worked out by a Los Angeles truck owner fastens tires which are cut or otherwise separated.

The subject for the next meeting will be "Operating Costs and Truck Maintenance."

ECLIPSE MOTOR TRUCK COMPANY, Franklin, Pa., has been sold to the Champion Truck Company, New England, Pa.

LONGWELL MOTOR TRUCK & SALES COMPANY has been organized at El Paso, Texas, with \$10,000 capital, by J. J. Longwell, H. M. Andreas and J. A. Kays.

KANSAS CITY MOTOR TRUCK SHOW (February 24th to 27th), the first commercial car show ever held in that city, was a pronounced success. Two hundred trucks were exhibited and considerable business resulted.

SIDNEY B. BOWMAN AUTOMOBILE COMPANY, 225-231 W. 49th Street, New York City, has taken the agency in the Metropolitan district for the Vulcan truck, manufactured by the Driggs-Seabury Ordnance Corporation.

THE LANSDEN COMPANY, Newark, N. J., has taken over its agency interests in Boston, Mass., and established a factory branch at that point in charge of H. E. Taylor, who was formerly the agent of the Lansden Company.

AN INTERNATIONAL AUTOMOBILE SHOW will be held at St. Petersburg, in May, 1913, under the auspices of the Imperial Automobile Club of Russia, and the patronage of the Czar. It is said that American cars will be given great prominence at this show.

CHASE MOTOR SALES COMPANY, St. Louis, Mo., has been taken over by the Kardell Motor Car Company and Charles A. Rohlfing, formerly the head of the Chase Motor Sales Company, will have charge of the truck department of the Kardell Company. The Chase salesrooms and service station will hereafter be at 4152-56 Olive Street.

MODERN TRUCK COMPANY, 206-210 N. 21st Street, Philadelphia, Pa., of which Wm. M. Brownback is President, has secured the agency for the Modern trucks built by the Bowling Green Motor Car Company, for the Atlantic Coast states. This company will also handle the Pope-Hartford trucks. Its organizers are members of the Wallace Automobile Company of Philadelphia.

The Relation Between the Agent and the Manufacturer

BY E. S. FOLJAMBE

This is the last of a series of eight articles by Mr. E. S. Foljambe, dealing with subjects of interest to agents, dealers and manufacturers. Briefly, the subjects taken up have been: Taking On a Commercial Car Agency; The Kind and Location of Salesroom; The Selection of and Instructions to Salesmen; Obtaining Prospects; Carrying the Campaign Into the Prospect's Territory; How the Engineering Force Can Assist the Retail Sales Department, and The Agent's Responsibility After the Sale.—Editor.

PART VIII Amount of Discounts

One of the first questions asked by the prospective agent of the manufacturer is, "what is the discount?" Usually he bases almost everything on the size of the discount. Other things being equal this is probably the correct attitude, but other things are usually not equal, and it often happens that the agent makes more on a truck—which sells rapidly and easily and on which repeat orders are frequent, although the discount may be only 20 per cent. than on perhaps a larger truck on which he gets 25 per cent.

It used to be a common custom to give large discounts and territories, the agent dividing up this field as he saw fit, but this did not as a rule bring the best results either to the manufacturer or the dealer. That both discounts and territory should be under the control of the manufacturer is now generally conceded.

Discounts to the dealer are often affected by the size of the establishment, the number of cars and the amount of stock in parts and accessories which he is able to carry. The season of the year at which this stock can be shipped is also an item. Without a stock of parts the proper service to the purchaser is almost impossible, and it is but natural that the necessary stock carried by the agent is each year growing larger, and that he is doing more and more for the purchaser in the way of service.

Free Service by a Branch

A branch of one well known company overhauls the trucks in use by purchasers during a period of one-half day each month. All work is done upon the truck which can be done in the half day by a good, practical inspector or repairman and the driver of the truck. Of course at first some of the customers said, "why we can't spare our truck for half a day every month," but gradually they did, and found that it actually saved time for the truck in the end. Incipient and embryonic troubles were detected and remedied while yet too young to put the truck out of commission, and as very careful reports were made of everything done in the way of repairs or adjustments, such as valve grinding, etc., the branch had a very good knowledge of the exact condition of each vehicle, and when anything unusual happened it was less difficult to place the blame. For instance, if a truck at the last overhauling showed that some of the main bearings were loose, or other adjustments should be made which could not be made in the half day's time, this would be suggested to the user. If not attended to and the truck is soon afterward held up on

the road with trouble in these parts, the branch is able to inform the user that this is not the fault of the truck, but the user's own fault, and can refer to the letter calling attention at the time to the bearings or other parts which should have been looked after. A system of this kind very soon educates the user to be careful of the kind of claims he puts in for work or parts, and the trucks run much longer, as they are not driven with parts out of adjustment or improperly assembled or lubricated. It is found also that the owners take more pride in having the truck presentable at the time when it undergoes its monthly half day inspection.

The Bonus or Rebate System

Occasionally a bonus system has been employed in which the dealer after selling a certain volume received a special discount or so-called rebate from the manufacturer. If properly used, this works to advantage, but cases are not infrequent of dealers in hopes of getting this special rebate, contracting for more than they could handle. These extra cars are difficult to sell, and have a tendency to cause price cutting.

Some dealers felt as though this bonus money rightfully belonged to them, and that it was in a way capital tied up, which they could not get the use of until the end of the period, so that the plan, although good from the maker's standpoint, is not always so advantageous from the dealer's point of view.

The dealer is virtually a part of the manufacturer's selling organization. When an agent is in a territory in which he cannot make good with one size, type, or make of machine, the wise manufacturer is willing not only for the dealer to take on another nonconflicting line, but even goes so far as to help him obtain another car or cars, which he feels will make good in his territory.

Manufacturers' Sales in Agents' Territory

As mentioned elsewhere in this series of articles, large purchasers of trucks in the big cities desire to deal directly with the manufacturer whenever possible. This occasionally results in sales of fleets of trucks direct from the factory to the user. Under these circumstances, where does the agent come in? This is a question which each manufacturer thus far has decided for himself, but is another one of those important subjects which should be taken up by an association of the dealers. The right attitude of manufacturer toward dealer is that of providing a special commission on all sales of fleets of trucks in which the agent is only indirectly connected. In the same way there should be some commission to the agent on any sale started by the agent and closed by the manufacturer. Every manufacturer has a duty to perform toward his agent, one phase of which is to protect that agent in his territory. By protection is meant a commission to the agent on every sale made within that territory, even sales which he does not personally bring in, the size of the commission depending upon the part played in the sale by the agent. In this, and this way only, is he really protected.

It has happened that the manufacturer failed to supply within season the number of trucks contracted for by the dealer, in which case the dealer usually loses sales, but as a rule has no redress. The writer knows of at least one instance in which the dealer was able to put through a contract with the makers, with penalties attached in the form of a forfeiture in case the cars could not be obtained as per contract. In this case the manufacturer forfeited \$2000. Such contracts are very unusual, and it is doubtful whether any manufacturer would at this stage in the commercial car industry, sign any such agreement. As a rule the maker ties up the agent, not the agent the manufacturer, the agent in most cases being more likely to be the irresponsible party.

There are many tricks which are resorted to by those desiring one or two trucks in small towns where no agency is established, and the manufacturer has to be on his guard. For example, in a territory in which a sale of ten cars would be all that could be expected for a season, the manufacturer is usually very well pleased to sign with a firm which guarantees to sell six trucks immediately. Investigation may prove that there are four or five companies or individuals desiring these cars, and that they have simply agreed if one of them can secure the so-called agency, they will split the commissions between them. In such a case the dealer, of course, makes no further effort towards sales, and if the territory is a growing one, the maker has simply lost a year as far as establishing a permanent and successful agency is concerned.

Time Allowed Agent to Make Good

This leads to the question of the length of time which the average manufacturer will give an agent to make good in his territory. There seems to be a very general tendency to carry along just as far as possible and as long as possible, an agent who has shown that he is actually making a strong effort to sell, even if the actual results may be practically nothing for the first year. In fact, there seem to be territories in which a year's time is necessary in order to produce even the first sale, after which, however, the sales curve approaches more nearly that of the ordinary territory. This is true of the first truck of the kind in the community, and especially in very conservative communities where it is difficult to "get under the skin" so to speak.

If, however, it is found that the dealer is not making the kind of effort that the manufacturer feels should be made, it is usually impossible to do anything before the end of the year, as the yearly contract is almost universal. The methods of obtaining information as to what is being done vary from a personal visit and investigation, to reports by travelling repairmen or trouble men, who after they have been in town for a couple of days investigating, may perhaps drop in on the agent and make themselves known. Some manufacturers who are more shrewd than the rest, often include in the contract the right of inspecting the books of the agent. In general, the makers give the agent every opportunity, and realize that to place a new man would mean beginning over again with a loss of from eight to ten months' time.

Time Payments

Whether time payments should be accepted is a matter largely dependent upon the credit of the purchaser and the financial ability of the agent or branch to carry the account. Sales on credit are made in many lines, but there are few in which the product stands the same chance of being damaged irreparably within a short time. With a commercial car the purchaser may not get around the corner before he is hit by a trolley, or attempts to drive the truck up a pole, damaging it beyond all resemblance to a motor vehicle. In such a case it is difficult indeed to collect the outstanding debt. If the buyer is good and able to meet his notes, and sufficient cash is paid in the transaction not only to care for the commission of the agent, but to give the manufacturer ample capital on which to work, such sales may not be detrimental. In general, however, the great danger in such a credit system is that the burden will become so great as to sink the partly established or under-financed agency. The truck, of course, remains the property of the dealer, but if forced to take it back its price has already been greatly depreciated, and it may, due to accidents or other causes, be in such a condition that it will only bring a small part of what is still due upon it. As mentioned in this series in a preceding issue, the attitude of the helper, driver, repair shop man and owner is very much less respectful toward the truck, and less care is taken

"I want to know how much money our agents are making, for if they are not making money, they will not be our agents long."
"Nothing succeeds like success; to be successful, have successful agents."
"Changing, — always changing agents, brings no profit."

of it, when it is known that the truck may at any time be turned back again to the agent. Under these circumstances it would not be the part of wisdom for any maker to advise an agent to sell on the instalment plan.

Trouble is occasionally experienced by the manufacturers with dealers or agents who permit, or even advocate, overloading. They sometimes believe that the flat territory in which the trucks are operating will permit of greater speed and greater carrying capacity, and have even gone so far as to remove the plates upon which the capacity was marked. The load capacity is a thing which should be absolutely controlled by the manufacturer, and every agent who persisted in claiming greater capacity than allowed by the manufacturer should by contract clause forfeit the agency. Even the statements of the agent must be kept within reasonable bounds, or dissatisfied users will result.

Manufacturer Dependent on the Agent

A famous car manufacturer at a recent monthly stockholders' meeting, at which a large dividend was being declared, made the remark, while the members were congratulating themselves and each other on the success of the company, "temporarily, this is very satisfactory." When asked what he meant, he said, "I want to know how much money our agents are making, for if they are not making money, they will not be our agents long." This brings out forcibly the fact, that it is not enough that the manufacturer make money, but the agent must also make a profit, otherwise he will not remain an agent. Changing—always changing agents—brings no profit.

One successful manufacturer not long ago made the statement that one of the most short-sighted policies that he knew

of on the part of the manufacturer, was to prohibit an agent from taking on any other cars as a side line, and restricting him rigidly to one make. When an agent is in a territory in which he cannot make good with one size type or make of machine, the wise manufacturer is willing not only for the dealer to take on another non-conflicting line, but even goes so far as to help him obtain another car or cars, which he feels will make good in his territory.

"Nothing succeeds like success." The successful dealer has the finest building, show room, and above all, service de-

partment. He has capital to carry through big sales, to temporarily carry on deliveries for a merchant that is "up against it," to use the vernacular. He is able to hire the best salesmen, the most expert repairmen, in short he will make sales where his less prosperous contemporary could not. The dealer is virtually a part of the manufacturers' selling organization and should be so considered.

It is therefore good business on the part of the manufacturer to procure for the agent a good side line or assist, in any reasonable way, in making the agent make money.

COMMERCIAL CAR AGENCIES WANTED BY:

W. J. Bailey, corner Arch and Scott Streets, Madisonville, Ky., wants gasoline cars of $\frac{1}{2}$ to 1 ton capacity, to sell at \$800 to \$1200.

Iowa Motor Truck Company, 101 Second Street, Des Moines, Ia., wants gasoline cars of 2 and 6 tons capacity, to sell at various prices.

H. A. Schaffer, Elkhart, Ind., wants gasoline cars of 1000 to 2500 lbs. capacity, to sell at \$700 to \$1500.

Walter M. Schofield, 5 East Elm Street, Greenwich, Conn., wants gasoline cars of $\frac{1}{2}$ to 3 tons capacity, to sell at various prices.

R. E. Lankford, 714 Seventh Street, N. E., Washington, D. C., wants gasoline commercial cars of 1 to 5 tons capacity, to sell at \$900 to \$3500.

The May Sales Company, New Springfield, O., want gasoline and electric cars of 1 ton capacity, to sell under \$1450.

Potters Motor Car Company, Diamond and Peach Streets, East Liverpool, O., want gasoline commercial cars of 500 to 1000 lbs. capacity, to sell at \$500 to \$700.

H. J. Fisher, Jeanerette, La., wants gasoline and electric commercial cars of 1, 2 and 3 tons capacity, to sell at not over \$2000.

C. Edson Abbott, Franklin, Mass., wants gasoline commercial cars of $\frac{3}{4}$ tons to 2 tons capacity, to sell at medium prices.

Freeman's Garage, Main Street, Grass Valley, Cal., wants gasoline commercial cars of $\frac{3}{4}$, 1, 2, 3 tons capacity, to sell at \$1000 up.

Michigan Motor Car Company, Branch, Charles City, Iowa, wants gasoline commercial cars of various sizes and prices.

Thomas Watson, 35 Lake Street, LeRoy, N. Y., wants gasoline cars of from $\frac{1}{2}$ to 3 tons capacity, to sell at various prices.

Pioneer Garage, Carbondale, Pa., want gasoline cars of 2000 to 2500 lbs. capacity, to sell at \$1000 or less.

Remington Motor Car Company, Remington, Va., wants gasoline cars of 1000 to 3000 lbs. capacity, to sell at various prices.

A. Bruce Potts, Howard City, Mich., wants gasoline cars of 1500 to 2000 lbs. capacity, to sell at \$1000.

Fariott Garage and Engine Factory, Seventh Avenue, West, Faribault, Minn., wants gasoline cars of 1 to 3 tons capacity, to sell at \$500 to \$2000.

Kissinger and Ockinga, Glenville, Neb., wants gasoline and electric commercial cars of various sizes, to sell at \$1200.

Moore Motor Car Company, 139 East Main Street, Lexington, Ky., wants gasoline commercial cars of 1500 lbs. capacity, to sell at \$700 to \$1000.

Earl E. Parks, Main and First Streets, Northville, N. Y., wants gasoline and electric cars of 1 ton to 3000 lbs. capacity, to sell at \$700 to \$2000.

David S. Ely, Waverly Place, Madison, N. J., wants gasoline and electric cars of 2000 lbs. capacity, to sell at \$1000.

The Auto Inn and Exchange, High Street and Sixth Avenue, Columbus, O., wants gasoline cars of 1000 to 3000 lbs. capacity, to sell at \$800 to \$2000.

Atlas Garage and Machine Shop, 1444 Green Street, San Francisco, Cal., wants gasoline and electric cars of various sizes and prices.

C. F. Jenkins, 186-190 City Garage, North Main Street, Pittston, Pa., wants gasoline and electric cars of various capacities and prices.

Culp Brothers, Pacific Grove, Cal., want gasoline and electric cars of various capacities and prices.

Newhart Brothers, Concord, Cal., wants gasoline cars of 1 to 5 tons capacity, to sell at \$1000 and up.

McGrew-Sinning Auto Company, Holton, Kan., wants gasoline cars of 1000 to 2000 lbs. capacity, to sell at various prices.

Bassett Hardware Manufacturing Company, Monticello, Ky., wants gasoline cars of all sizes and prices.

J. A. Baart, Choteau, Mont., wants gasoline and electric cars of all sizes and prices.

Kuhns-Woodruff Company, 435-437 East First Street, Dayton, O., wants gasoline cars of 1000, 1500 lbs. and heavier types, at all prices.

Hobert Auto Sales and Supply Company, 408 Columbus Avenue, Sandusky, O., wants gasoline and electric cars of 1500 lbs. to 3 tons capacity, to sell at \$700 to \$2400.

Girard Model Works, Girard, Pa., want gasoline and electric cars of $\frac{1}{2}$ and 1 ton capacity, to sell for \$1000 and under.

U. G. Whitacre, 106 Hancock Avenue, Vandergrift, Pa., wants gasoline cars of $\frac{1}{2}$ to 2 tons capacity, to sell at \$700 to \$1500.

Wheeler Transfer Line, Menasha, Wis., wants gasoline cars of 3 tons capacity, to sell at various prices.

Woods-Ford Auto Company, Main Street, Lawrenceburg, Ky., wants gasoline commercial cars of 1, 2 and 3 tons capacity, to sell at \$1000 to \$3000.

Adolph Lieber, Bellevue, O., wants gasoline cars of various sizes, to sell at \$1000.

The Cambridge Motor and Storage Company, 703 Brown Avenue, Cambridge, O., wants gasoline cars of 1000, 1500 and 2000 lbs. capacity, to sell at \$600 to \$1500.

George B. Carter, 22 Bank Street, Petersburg, Va., wants gasoline cars of 1 to 5 tons capacity, to sell at various prices.

Cyrus L. Hock or Five Point Garage, 504 Dacotah Street, Bethlehem, Pa., wants gasoline and electric cars of 800 to 1500 lbs. capacity, to sell at \$1000 to \$1500.

J. W. Richley Auto Company, 237 East Philadelphia Street, York, Pa., wants gasoline commercial cars of 1 ton to 3 tons capacity, to sell at \$800 to \$2500.

Motor Sales Company, 903-905 Island Avenue, McKees Rocks, Pa., wants gasoline and electric cars of 1, 2 and 3 tons capacity, to sell at a low price.

The Brucker Motor Car Company, 30-32 Park Avenue, Mansfield, O., wants gasoline cars of 800 lbs. to 1 $\frac{1}{2}$ tons capacity, to sell at \$800 to \$1100.

Stephen V. Britt, Purchase, N. Y., wants gasoline cars up to 5 tons capacity, to sell at various prices.

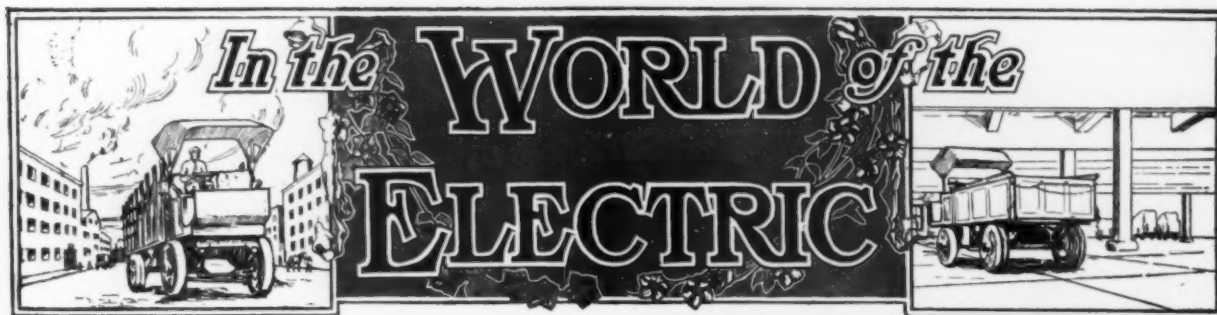
Story Motor Supply Company, Bozeman, Mont., wants gasoline and electric cars of various sizes and prices.

Ira Neal, Pickering, Mo., wants gasoline and electric cars of 20 to 40 h. p., to sell at \$630 to \$1000.

Burlington City Garage, Burlington, Colo., wants gasoline and electric cars of various sizes and prices.

Note.—Inquiries of the above character will be inserted for our subscribers without charge of any kind.

This service, however, is only for subscribers and those wishing to take advantage of it and who are not subscribers, should send their subscription order and remittance with the necessary data for the notice. *Advertisement.*



THE G. V. INDUSTRIAL TRUCK

The General Vehicle Company, of Long Island City, New York, showed an industrial truck especially adapted for use on docks and yards, and a wide range of local requirements.

This truck is of the electric type, having only two rotating parts, with both battery and driving mechanism mounted below the platform, which accordingly is free and clear, to carry not only a compact load, but iron pipe and similar material. The truck is controlled by two hand levers, located at a convenient position for the operator, and a brake pedal.

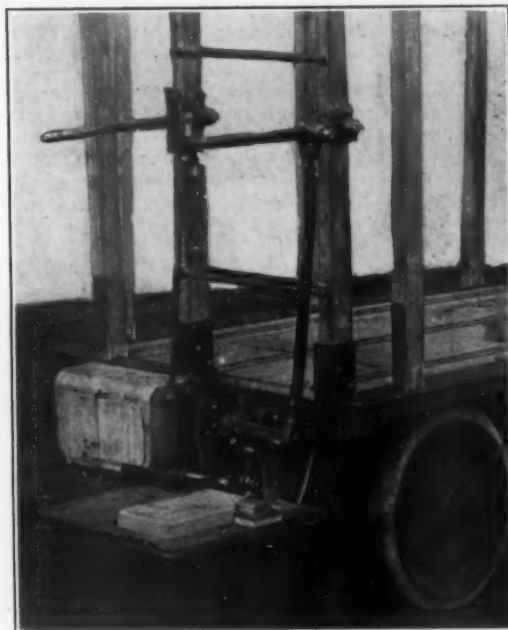
The capacity of this freight or baggage truck is 2000 lbs., and its weight is 2050 lbs. The battery equipment consists of 44 lead cells, weighing 650 lbs., and having an ampere capacity of 48. The motor is of the G. E. type equipped with Hess-Bright ball bearings. The controller affords three speeds in either direction. The frame is of 3 in. chan-



G. V. With Side-Opening Body

Here is shown the G. V. Industrial Truck fitted with side-opening body, for carrying and discharging stone, sand, etc. The gates are operated by a lever, which simultaneously opens both gates.

nel rolled steel, mounted on cast steel wheels, and having a wheelbase of 42 in. The tires are 20 x 2½ in. G. V. solid rubber. The transmission is through spur gear and pinion, direct from motor to right rear wheel, enclosed in dust proof case. The brakes are of the internal expanding type, located on the rear wheels, and operated by pedal. Both front and rear springs are of the spiral type, mounted on a 2 in. I-beam cast steel axle at the front and a 1½ in. round chrome vanadium steel axle at the rear. A speed of 7 m. p. h. is obtainable, and the miles per battery charge, with the



G. V. Operating Mechanism

The operator's platform is here shown, with the control and steering levers located within convenient reach, and the brake pedal so located as to permit of easy operation.

truck loaded, are 25. The loading space with stakes is 66 x 37½ in., and without stakes 72 x 42½ in. This truck equipped with single motor and loaded, will climb grades up to 10 per cent.; for grades exceeding 10 per cent., two motors are furnished.



The G. V. Industrial Truck

Showing the forward stakes lowered, thus acting as skids, to permit of loading heavy and bulky articles. The convenience of operation can be noticed, as can also the location of the batteries.

THE BAKER GENERAL-SERVICE RUNABOUT

This late addition to the Baker electric line, built by the Baker Motor Vehicle Company, of Cleveland, O., has a capacity of 750 lbs. and gives a mileage radius of anywhere from 60 to 100 miles on one charge, on a battery equipment of 30 cells.

The steering is by wheel, with controller handle mounted on the steering mast directly beneath the wheel. It is equip-



The Baker Service Runabout

This model can be furnished with either panel or open bodies. In general appearance this car is very similar to a gasoline machine

ped with full elliptic springs in the rear and semi-elliptic in the front. The drive is by bevel gear shaft with a chain reduction.

In general appearance this new model closely resembles the gas motor type, having a hood with similar lines and fitted with doors to the cab which is enclosed by a windshield and top with side curtains.

Open and panel bodies compose the standard body line on this chassis. The open body is square and has a loading space 30 by 30 in., while the panel body, which is fitted with rear doors, has a loading space of 32 in. long and 36 in. wide, measured at the seat level.

The motor is of the same design and construction as those used in large trucks manufactured by the Baker company, and is built in accordance with the size, capacity and

speed of the car. The equipment consists of a windshield, trip odometer, two head lights, tail light, Sangamo ampere hour meter and a complete outfit of tools.

THE HUNTER AUTO SERVICE COMPANY, 321 S. 4th Street, Springfield, Ill., has taken the agency for the Borland-Grannis electric car.

THE GENERAL VEHICLE COMPANY, INC., of New York City, has been incorporated to deal in electric vehicles and also gasoline vehicles, with a capital stock of \$6,000,000.

THEODORE D. GERE has resigned as one of the receivers of the Champion Wagon Company, Owego, N. Y., and has organized the Empire Electric Vehicle Company in the same city.

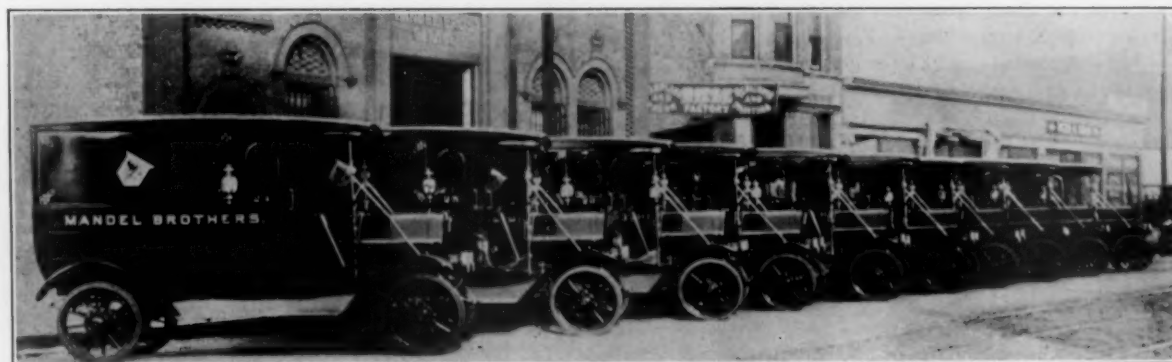
GERALD H. MURPHY, assistant treasurer of the Splitdorf Electrical Company, has severed his connections with that company. He has made no decisive plans for a future connection.

GEO. H. KELLY, manager of the truck department of The Baker Motor Vehicle Company, Cleveland, O., has started on an extensive Western tour, in the interests of big business and service developments.



Waverley Electric Delivery Wagon

In service of the United States Parcel Post, Indianapolis



Fleet of Electrics in Service of Dry Goods House

The Mandel Brothers, Dry Goods Merchants of Chicago, have added to their delivery system ten 1000 lb. delivery wagons of the shaft-driven type, purchased from the Waverley Company, of Indianapolis. The cost of operation is figured as follows: \$2 per day per vehicle operating expense, including charging, washing, garaging and replacing of parts; \$1.30 per day for fixed charges, including depreciation, interest, etc.; \$2.50 per day for driver's wages. Total, \$5.80.



Kerosene and Heavy Oil Fuel Devices

BY OUR FOREIGN CORRESPONDENT

The Main Difficulties

THE chief difficulties in the use of kerosene for road transport work as we have found them in Europe, were summed up as follows by Professor Morgan and E. B. Wood in their joint paper before the British institution of Automobile Engineers last spring:

- I. (a) The ordinary carburetor difficulties due to variation in mixture quality.
- (b) The difficulties in vaporizing the fuel, and holding it up as an explosive mixture.

On this basis, Messrs. Morgan and Wood were led, as a result of their experiments, to lay down the following essentials of a kerosene carburetor:

- II. (1) All fuel should be completely evaporated before entering the engine, although partial condensation might occur after evaporation.
- (2) The fuel should be evaporated in the presence of some 10 to 20 per cent. of the total air required, and then mixed with the remaining air.

As a matter of fact, a third principle was enunciated, namely, that the evaporated fuel should be superheated before mixture with the main air supply, so as to produce a fog of extremely fine texture on dilution, and render it a fixed gas. Later work, however, shows that this last principle is open to question, for there is no evidence that a finer fog results from superheating, while there is evidence that with high superheating, a dense or readily deposited fraction occurs, causing the highly superheated charge to deposit in greater quantities than the cooler charge. The fixed quantity of gas produced is also disappointing, while its character is reported as undesirable.

A few typical examples of the best known devices over here will show how the various difficulties have been met and how greatly authorities differ on the relative values of those difficulties and the method of dealing with them.

Increased Production of Benzol

Within the last month the kerosene problem has been modified or complicated by a development that promises to alter the economic possibilities of another fuel, namely benzol. The present benzol supply is obtained as a by-product in the manufacture of gas from coal, which hitherto has only yielded quite a limited supply—about one to one and a half gallons per ton of coal; but now there seems some prospect of at least double that supply from gas making alone, quite apart

from the fact that the new low temperature del Monte process will enable coal slack and other comparatively useless forms of coal to be utilized. Shale can also be made to give a very large yield of products. It is calculated that 3 to 10 gallons of 100 per cent. benzol per ton will be obtainable from coal, and this at one-third to one-fourth of the cost of the old process, while as much as 135 gallons of liquid distillate to the ton has been obtained from shale. It is calculated that this fuel can be produced at about 20 cents to the gallon in Great Britain, as opposed to 28 cents at present, being charged for the limited supplies of benzol available. But as far as kerosene and heavy oils are concerned the G. C. people find great variation in them. Some can stand a compression of over 90 lbs. per sq. in. without "cracking" and causing pre-ignition, others little more than 50 lbs., and it has been found that the mixture of benzol with the oil fuel in the vaporizer (the benzol must be passed through the vaporizer, not the carburetor), affords a very effective means of correcting the oil fuel, for the larger carbon content in the benzol enables slower combustion to take place, while the oil fuel tends to correct the sluggishness of the benzol. Accordingly experiments are being carried on at present, which hitherto have gone to show that kerosene and heavy oils may be improved by mixing in the vaporizer with proportions of benzol varying from 10 to 50 per cent. of the mixture. Though kerosene only averages retail about 14 cents in Great Britain, the

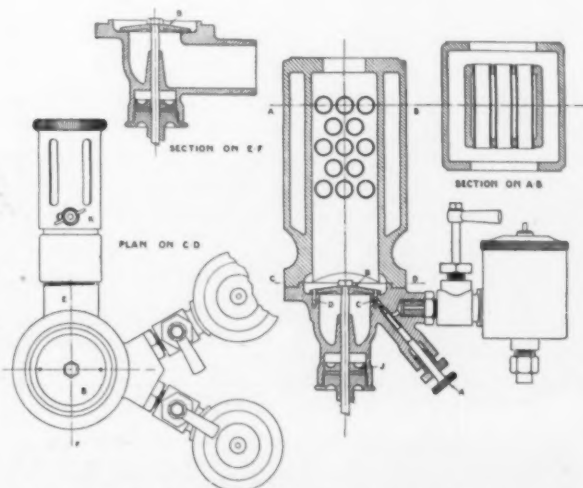


Fig. 1. Sectional and Plan Drawings of the Davis Paraffin Carburetor

"Firestone"

Continuous Base Notched Tread TRUCK TIRES

Increase
Truck
Profits

FOR rear wheel equipment on heavy service trucks, increase profits by preventing losses.

Reduce Tire Expense. Traction wave cannot form, tread separation cannot occur. Tough, resilient Firestone rubber means the greatest mileage.

Reduce Truck Repairs. Continuous base, working in unison with resilient tread absorbs all jolt and vibration—prevents mishap to mechanism.

In addition there is prevention of skid or side-slip, increase of traction, reduction of gasoline expense. Now that the price of gasoline is being advanced, this is an economy worth while.

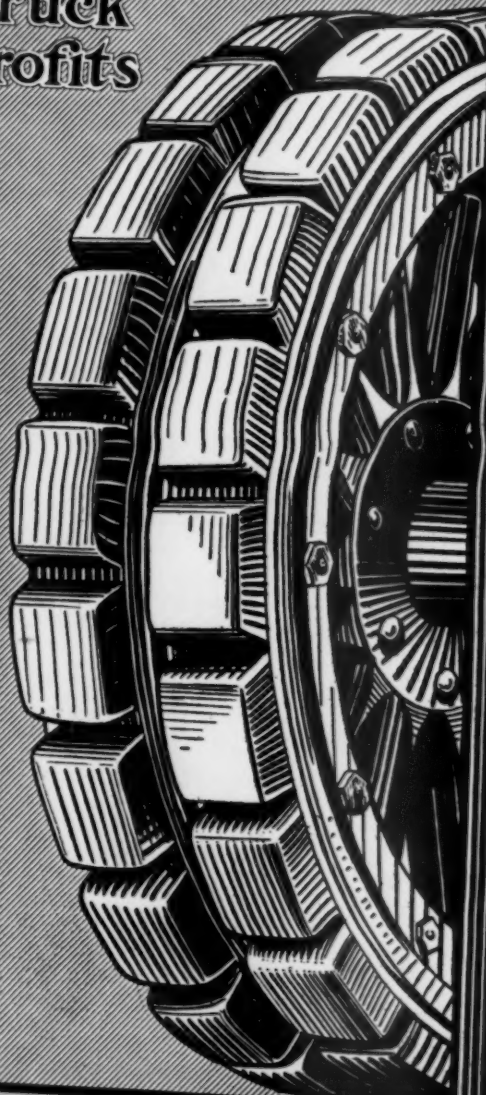
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higher thermal value of the benzol somewhat balances the cost, a pound of benzol giving about 23,000 thermal units to some 20,500 for kerosene.

The Davis Carburetor

The Davis kerosene carburetor is one of the oldest of the European appliances for using kerosene for automobiles. It may best be described as a carburetor-vaporizer. The delivery from two float chambers, each with separate float, needle valve and control cock, meet at the apex of a Y connection and deliver through a common orifice into the passage controlled by the fine adjustment valve A, seen in the sectional side elevation of the carburetor, Fig. 1. The upper opening of this passage is regulated by a taper pin C, let into the valve B., which is controlled by a light spring (not shown) at the bottom of its spindle, and also provided with a parallel pin D, to act as a guide. Beneath this valve is the intake of the air controlled by the semi-rotary regulator K. (see plan, and section on E.F.), which enables the capacity of the air inlet to be reduced when necessary, so that a carburetor with a $1\frac{1}{4}$ in. throttle may be suited if necessary to a $1\frac{1}{8}$ in. intake pipe. The engine is first started on the float chamber containing petrol, and the exhaust then enters the jacket surrounding the vaporizing chamber above the valve, and through the tubes passing across the chamber (see sectional drawings), so that as soon as a sufficient degree of heat has been attained, the engine can be switched on over the kerosene, the suction all the time, both with gasoline or kerosene, drawing the air in through the regulator K. and lifting the valve B. so that the air may mix with the fuel supply in its passage past the valve. The makers of these appliances do not advise more than 70 lbs. engine compression, and in fact find that 50 to 60 lbs. will afford the best results.

The G. C. Vaporizer

One of the most successful kerosene using devices of the present day is the G. C. vaporizer, the invention of George Constantinesco, a Roumanian engineer. The general arrangement is best explained by the drawing fig. 2, which shows how the kerosene is led to an exhaust heated vaporizer, and thence by separate throttle is regulated to the engine with an additional air valve at B., which can be adjusted if the engine smokes or back-fires, either on full or light charge, but all such adjustments must be made after the engine has been on full charge continuously for at least 15 minutes. For the

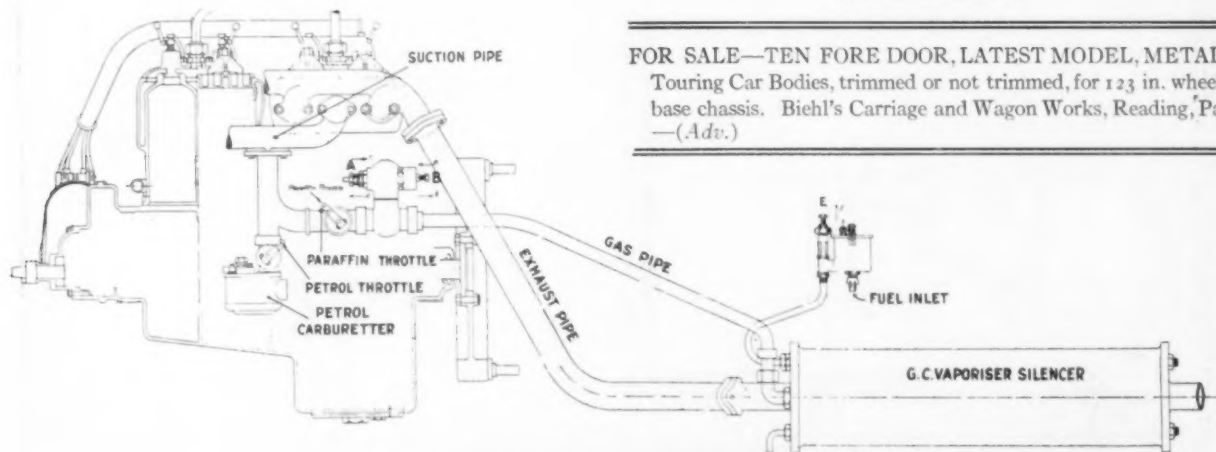


Fig. 2. The General Arrangement of the G. C. Vaporizer

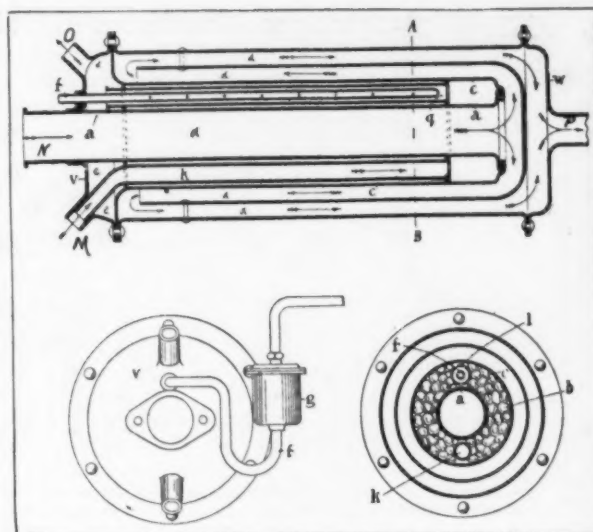


Fig. 3. Sectional Drawings to Explain the Internal Economy of the G. C. Vaporizer

internal economy of this silencer let us refer to fig. 3, but in doing so it should be noted that the asbestos lagging around the vaporizer, which is an essential, is not shown. Exhaust enters at N and follows the direction of the arrows along the passages D., emerging at P. whence, if preferred, though not necessary as a rule, it can be led to another muffler before passing into the atmosphere. Kerosene flows from the tank by gravity into a tube, which passes along the top of an annulus surrounding the exhaust pipe; indeed, the exhaust pipe constitutes the inner wall of the annulus, while the outer wall is also heated by the exhaust gases. A lot of little loose iron bars or studs in the annular chamber are soon raised to a high temperature, and the pipe leading petrol into this chamber is pierced with small holes along its length, so that the kerosene is injected among the pieces of heated metal and by them gasified. At the same time the predetermined proportion of warm air is drawn into this annular vaporizer along the pipe K. and mixed with the gas, whence the mixture of vaporized kerosene and air is drawn at high velocity—high velocity is important—through the outlet O., and before reaching the engine is further diluted and cooled by extra air introduced past the valve fitted in the intake.

(To be Continued)

FOR SALE—TEN FORE DOOR, LATEST MODEL, METAL, Touring Car Bodies, trimmed or not trimmed, for 123 in. wheel-base chassis. Biehl's Carriage and Wagon Works, Reading, Pa. —(Adv.)



The Final Choice of the Discriminating Purchaser

After trying out several different types of motor trucks for the past two years, The Atlantic Ice and Coal Corporation, of Atlanta, Georgia, has recently ordered fifteen White Trucks for immediate delivery.

Responsible firms prefer to purchase truck equipment from responsible manufacturers. This is one of the reasons why the final choice of the discriminating purchaser is invariably White.

Another point of importance is the fact that White Owners continue to buy White Trucks. When Whites are used, experimentation ceases.

White Trucks are the most economical trucks to operate.

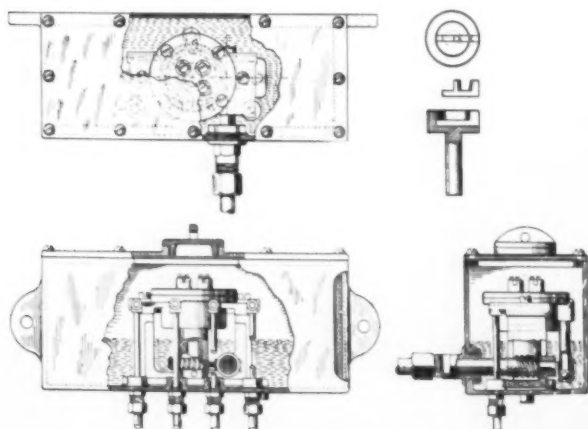
THE WHITE  COMPANY
CLEVELAND

Manufacturers of Gasoline Motor Cars, Trucks and Taxicabs

TRUCK ACCESSORIES AND APPLIANCES

THE PEDERSEN MECHANICAL LUBRICATOR WITH MULTIPLE FEED PUMP

The accompanying cut shows detail views of the Pedersen Lubricator, which is designed more particularly for commercial car use. It is manufactured by the Pedersen Lubricator Company, 636-44 First avenue, New York City. A novel feature of this pump is its extreme simplicity, as while it may be made with any number of feeds, and each feed individually adjustable, it has only two moving parts. It allows for a wide range of attachment to a motor, as it may be connected direct to any rotating shaft or placed in an oil tank, or at a considerable distance from same, as these pumps have strong suction and discharge power. They may be placed in any desired position either horizontal or vertical, and will work equally well in either direction of rotation without any change to the pump.



Three Views of the Pedersen Mechanical Lubricator

The pump consists of a casing and cover, the casing having an enlarged cylindrical end bore with inlet and discharge openings, and has within the casing a rotating shaft with a head and stem fitting the bore of same, the end of the head bearing against the under surface of the cover.

In the face of the casing is a circular recess having openings leading to the circular bore, forming inlet or suction ports; equally distant between these are the discharge ports communicating direct from the bore to the outlet connections.

The head of the shaft is recessed in its outer face and transversely slotted, with a sliding piston fitting in same, this piston being also recessed, forming at one end a head and at the middle a pin or stud.

Fastened in and projecting from the under side of the cover are one or more studs according to the number of feeds,

and in rotating the shaft, these studs act upon the stud of the piston, giving same a transverse movement, drawing in the oil through the suction ports when opposite same.

Equally spaced between the fixed studs in the cover and passing through same are adjusting screws having tapered ends. These act upon the neck of the piston, which is of a corresponding taper. The action takes place when the piston is in line with the discharge port, and the amount of discharge can be varied by means of the taper ended screw.

The operation of the pump is as follows: By rotating the shaft which carries the slidable piston, same is by acting upon the stationary pin, given a transverse inward movement when opposite the inlet port drawing in the oil, same being confined between the casing and the piston until opposite the outlet port, when the piston is again acted upon by the tapered screw and given an outward movement, discharging the oil.

IMPROVEMENTS IN THE LBA BATTERY

A number of improvements are noticeable on the LBA storage battery over last year's product, as manufactured by the Willard Storage Battery Company, of Cleveland, O. All of the improvements made are of course designed to increase the efficiency and life of the battery.

Attention is called to bolted on connector (5) as made by this company. To insure the best possible results the top of the terminal and the lower portion of the connector are machined so that when the connector is bolted down tight the two parts are in perfect contact and in case of acid accidentally being spilled on the top of the case no acid can work its way in between the connector and the battery terminal.

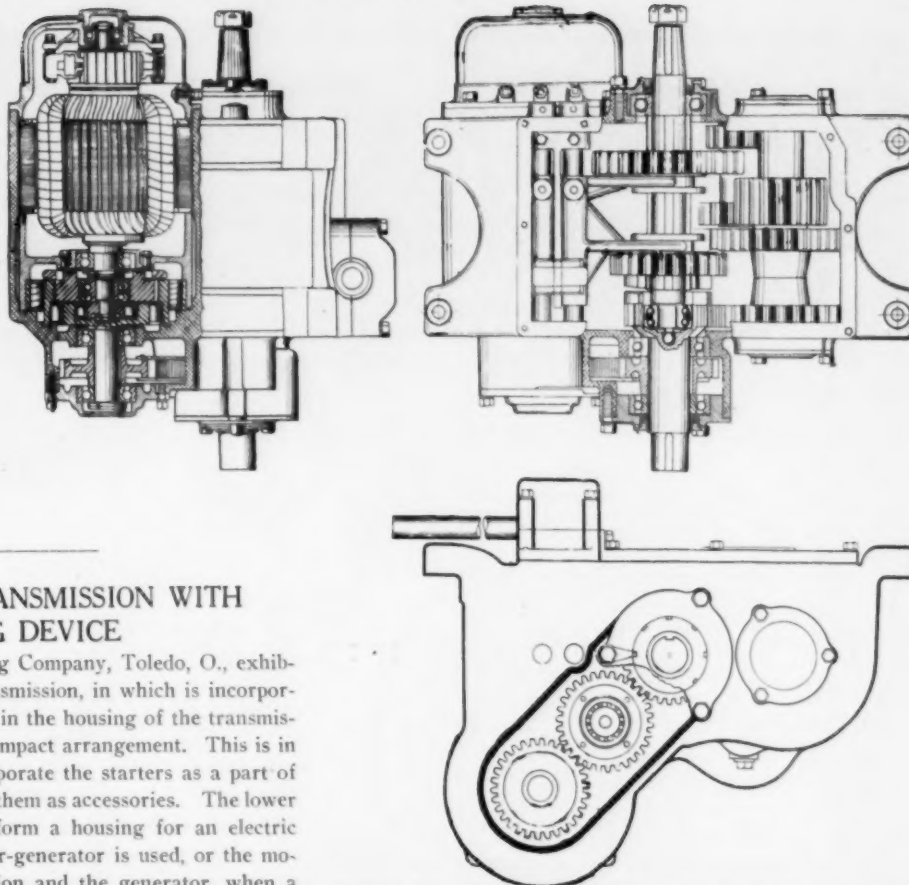


Parts of the LBA Storage Battery

The above illustrations show some of the improvements in 1913 LBA battery. Fig. 1 shows a jar with heavy walls, to insure against breakage, with both standard and deep spaces for mud. Figs. 2 and 3 illustrate the new quick-sealing cover, using a pure, soft rubber gasket. This cover can be instantly removed. Fig. 4, vent plug, which condenses the gas produced by charging by breaking the gas bubbles before they escape. Fig. 5, bolted on connectors. (For details see text.) Fig. 6, lead plated copper connector, having thirteen times the conductivity of ordinary lead.

This construction reduces the resistance, and therefore does not hinder the easy flowing of the current. Another feature of this battery is that a rubber gasket is used instead of the ordinary sealing compound usually employed.

For starting and lighting purposes this company is calling special attention to its new 6 volt starting battery. This battery is made along the same lines as the regular LBA battery, the difference being that the terminals, cables, etc., are all made heavier to correspond to the additional service required for this line of work.



NEW WARNER TRANSMISSION WITH STARTING DEVICE

The Warner Manufacturing Company, Toledo, O., exhibited for the first time their transmission, in which is incorporated a starting device, included in the housing of the transmission, making a very neat and compact arrangement. This is in line with the tendency to incorporate the starters as a part of the mechanism, rather than add them as accessories. The lower part of the case is shaped to form a housing for an electric motor-generator, where a motor-generator is used, or the motor can be placed in this position and the generator, when a separate one is used, can be mounted on the engine. The one shown was the Apple, with the motor-generator enclosed in the transmission case, and driving the main shaft by spur gears, which are also enclosed. This is the first time, so far as the writer is aware, that the starting outfit has been incorporated with the transmission. It has the advantage of relieving the engine of some of the numerous parts now attached to it, and of a more or less flexible starting through the clutch. This clutch connection also permits the starting motor to reach its speed before it is called upon to turn the engine over.

Warner Transmission Fitted With Apple Motor Generator

culating system at any desired temperature. The heater is connected by simply hooking the tube in the radiator filler opening; connecting the heater circulating system with the radiator pet cock (by means of a small rubber tube), then connecting the burner with the city gas supply pipe by means of a flexible metallic tube. Beside keeping the motor warm, it also keeps the garage at a comfortable temperature, and practically acts as a garage heater as well.

This company is also making a patent license bracket combined with electric tail lamp, same being designed especially for truck use. The lamp is heavily reinforced, making it practically indestructible and capable of withstanding the heavy jolts and jars coincident with commercial car use. The license tag holder requires only one thumb screw for securing the license in place. The lamp is built upon the quick interchangeable system so that in case of damage to any part the same can be easily replaced.

THE NEVEROUT RADIATOR HEATER AND PATENT LICENSE BRACKET

The Rose Manufacturing Company, 910 Arch Street, Philadelphia, Pa., is calling the commercial car user's attention to its radiator and motor heater, as a means of keeping the truck or delivery car in good condition for quick starting and thus eliminating the usual time required in trying to start the car after it has reposed in a cold stable or garage over night. This heater keeps the water in the cir-



The Rose Patent License Bracket



The Rose Radiator Heater Attached



The Fischer Electric Cast-Steel Wheels

Three views of the hollow spoke, hollow rim type of wheel, which is the latest development of the Geo. Fischer Electric Steel Works. This type of wheel is used as standard equipment for German, French and Italian army trucks. The second and third illustrations from the left, show the style of wheel being tried out by a prominent American truck company. The ductility of this wheel is well illustrated in the illustration at the extreme right.

THE FISCHER ELECTRIC CAST-STEEL WHEEL

Peter A. Frasse & Company, Inc., of 417-21 Canal Street, New York City, are sole American representatives of the Fischer Electric Cast Steel Road Wheel, made by the George Fischer Electric Steel Works, of Schaffhausen, Switzerland.

This company's latest development in this line of work is illustrated herewith and is what is termed a hollow wheel, that is, both spokes and rim are hollow. This form of wheel is being used by the London General Omnibus Company, which has two thousand 'busses on the road using Fischer wheels.

The weight of the wheel is extremely small, considering its strength. As an instance, the equipment used by the Daimler omnibuses (three ton vehicles) weigh as follows: front wheel, 36 x 4 in. single, 112 lbs.; 36 x 4 in. dual rear wheel, 216 lbs. These weights are for one wheel only, finished, ready to have the tires pressed on. A feature of these wheels is that they can be designed to take any form of tire without having extra steel wheels pressed on to them. The steel in these wheels is of a comparatively low carbon, being about .2 and is of an exceptional purity, owing to the fact that the

steel is smelted in an electric furnace, where there is an absolute control over the material.

THE SCHWARZ SPRING WHEEL

Charles L. Schwarz, 3514 N. Broad Street, Philadelphia, Pa., is manufacturing a spring wheel which can be fitted with either rubber or wood block tires.

The wheel fitted with wood tires is made up of springs 2 in. wide, of No. 4 Vanadium steel. The carrying capacity of the wheel is said to be 5000 lbs.

The main springs are made with a short end of smaller and a long end of larger radius. In assembling the two open ends being drawn together with a clip bolted to the rim causing tension in opposite directions, prevent any rattling.

The center members fitting to the main springs and following one another around the hub barrel, with tension, give stability to the wheel. The weight is carried by all the springs at the same time.

To prevent rusting the springs are lead plated.

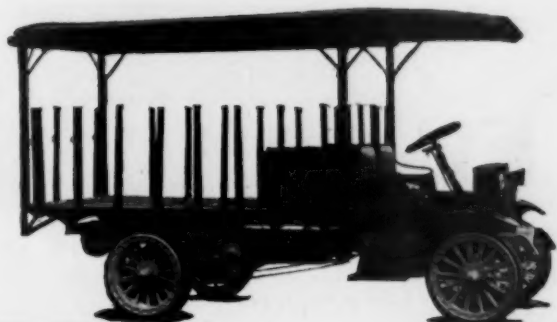


Two Schwarz Spring Wheels

The illustration on the left shows Schwarz spring fitted up as the driving wheel, with hub and brake drums in place. The wood in the block tires is chemically treated, encased in steel, and rubber-cushioned, all parts wearing at the same time.

The wheels are made to fit any hub used on wood wheels. The main springs are provided with wood fillings at the small bends, through which pass the bolts of the hubs.





B. A. GRAMM'S Trucks

B. A. Gramm's trucks mark the introduction of a period of rapid progress, a standardizing of design, a refining of details, and a supplying of better and more equipment. They offer values far exceeding anything yet placed on the market. They offer equipment and conveniences which make their operation simple and economical, and which have never before been supplied with motor trucks—more value, more equipment, and more service for the investment than any others—maximum service and efficiency—profitable to operate.

Many Exclusive Features

Long stroke powerful motor; Dry Plate Multiple Disc Clutch; Dog Clutch Type Transmission, doing away with the stripping of gears. Large Tires; Long Swinging Springs, guaranteed for the life of the truck; Electric Self Starter; entire power unit suspended on spiral springs, taking up all shock. Best Material; Best Workmanship—*Up-to-the-Minute Trucks* in every sense of the word. Backed by the strongest Warranty Guarantee ever offered.

Write us and we will send you photographs, descriptive literature, and will tell you about the many advantages of "*The World's Best Trucks*" and of the remarkable values we offer you.

The Gramm-Bernstein Company
Exclusive Motor Truck Builders
Lima, Ohio



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Keystone Lubricating Co.	52		

One pound of Keystone Grease is guaranteed to equal in efficiency 3 or 4 pounds of any other grease on the market, or 4 to 6 gallons of the best bearing oil.



DO you buy your lubricants on a basis of low first cost or on a basis of ultimate economy?

When you decide to buy a lubricant because of efficiency and dependability rather than because of cheapness, you are on the straight road to economy.

Keystone Grease is slightly higher in first cost than other lubricants, but is specifically guaranteed to go farther with less attention and give more service in lubrication than any other lubricant, whether it be oil, grease or compound.

Keystone Grease and Motor Oil may be procured from any reliable dealer or garage, or from any of the following branches:

PHILADELPHIA (Auto Dept.)	1327 Race Street
PITTSBURGH	Jenkins Arcade Building
NEW YORK CITY	1777 Broadway
CHICAGO	2132 Michigan Avenue
NEW ORLEANS	610-12 Chartres Street
BOSTON	284-290 Franklin Street
DENVER	First National Bank Building
KNOXVILLE, TENN.	104 Tennessee Avenue
SAN FRANCISCO	268 Market Street
SYRACUSE, N. Y.	487 South Salina Street

KEYSTONE LUBRICATING CO.

Executive Offices and Works

TWENTY-FIRST, CLEARFIELD & LIPPINCOTT STREETS
ESTABLISHED 1884

PHILADELPHIA



Kelly Trucks Your Profits

You can make money selling motor trucks.

You can finish each season with increasing profits.

To do this take advantage of these fundamentals:

(1) You must have good trucks to sell—and good selling trucks.

(2) You must be supported by an organization which will co-operate with you to give 100 per cent truck efficiency to the user—that's Kelly service.

(3) You must have the benefit of working with a factory sales department which has but one object—the sale of

KELLY TRUCKS

for you. This means aggressive advertising, intelligent publicity and direct sales co-operation.

In your community we will **CREATE** a demand for Kelly trucks and, if you are the dealer with the big brains, *wire immediately at our expense.*

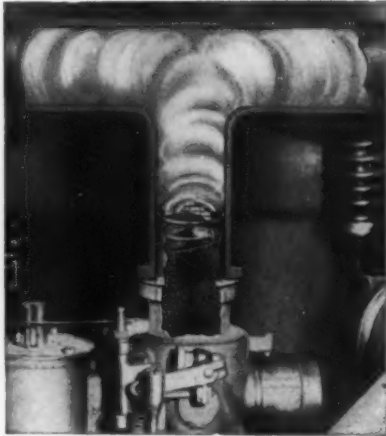
Address Sales Department

The Kelly-Springfield Motor Truck Company

1242 Burt Street, Springfield, Ohio

(4)

Reduces Gasoline Bills 25 to 40%!



The Mondex-Helix Mixer

The New Carburetion Method

MONDEX-HELIX

in Combination with any Carburetor

Saves one-fourth to about one-half gasoline and doubles the power of poor gasoline.

Gives 100% increased flexibility. Increases power on hills and all grades—at minimum and maximum speeds—from 10% at high speed, to 50% at low speed—particularly heavily loaded vehicles.

Makes a noisy motor silent and smooth. Prevents back-firing and carbonization. It minimizes wear and tear.

Used by the Consolidated Gas Co., I-T-O-A Cab Co., Knox Automobile Co., Selden Motor Vehicle Co., Western Electric Co., Long Island R. R. Co., Mason-Seamon Transportation Co., U. S. Motor Cab Co., N. Y. Telephone Co., John Wanamaker, Stern Bros., Brooklyn Eagle, Burns Bros. and hundreds of other large concerns.

Sizes for any carburetor sent, with full instructions, C.O.D. or by mail on receipt of price.
 Sizes 1 inch to 1½ inch . . . \$3 Sizes 1½ to 2 inches . . . \$4

AGENTS WANTED

THE ARISTOS COMPANY

254 W. 54th St., N. Y.

ACME Universal Joints



For Motor Trucks—

**Accurate — Durable — Efficient
Absolutely Dust-Proof**

Leading motor truck makers have adopted exclusively the **Acme** due to improved mechanical features not found on any other universal joint.

We specialize on universals for motor trucks and are in position to meet your every requirement.

Ask for catalog and send your specifications.

ACME UNIVERSAL JOINT CO.
1421 Fulford Street Kalamazoo, Mich.



**BUILT
TO
ENDURE**

**A Quality Truck
A Substantial Company**

Our entire output having been contracted for during the next two months, watch for our later announcements

Abendroth & Root Mfg. Co.
of Newburgh, N. Y. Since 1867
46 Church St., New York

When Writing, Please Say—"Saw Your Ad. in the C C J"



Dart Trucks Outsell all Others at the New York and Chicago Shows

Dart Trucks again demonstrated their superiority to dealers and users who visited the New York and Chicago shows. From present data, Dart Trucks absolutely outsold all others of same capacity at the shows. This remarkable demonstration is due to the fact that nowhere in the entire country can you find a motor truck with such liberal specifications as the Dart offers, at anywhere near the low Dart prices.

**Three
Exceptional
Models**

Dart

**\$ 750
1100
1775**

Motor Trucks

A Few Features of Dart Trucks

Here are a few of the features of Dart Model B that make it so much in demand: 25 to 30 H. P., 4 cylinders, 4 1-16 x 4 1-2 inches, cast en bloc. Stromberg carburetor. 1913 Eisemann magneto. Lavigne steering gears. Brown-Lipe, 1 ton transmission mounted on Timken bearings. Sheldon 1 ton jack shaft, torsion rods and self-intensifying brakes. Center control, left hand drive. Goodyear tires, side flange S. A. E. specifications. Chassis with seat, lamps, horn and tools, \$1100.

Complete specifications of all models, sent on request.

Low Dart Prices Amaze Motor World

Space will not permit us here to give you a complete list of the liberal specifications of Dart Trucks. Write for all the details and see for yourself why all motordom was amazed when we announced the broad specifications of Dart Trucks at such exceptionally low prices. The complete story will satisfy you that nowhere, can you find such quality in motor trucks at anywhere near Dart prices.

We're doing everything possible to supply the demand. Wire or write us.

Dart Motor Manufacturing Co., Dept. J
Factories: Waterloo, Iowa

(11)

The Car That Increases Your Business

Lippard-Stewart

The Delivery Car

Chassis \$1650

Standard Panel
Body, \$150

Standard Ex-
press Body, \$125



The Lippard-Stewart Model "P", 1500-lb. Delivery Car, 30 Horse Power

A GOOD FINANCIAL INVESTMENT is judged by three things—safety—security—income. Demand these three features when you purchase a delivery car and you're bound to buy satisfaction. First analyze the car. Does it represent safety and security from a purely business standpoint? Will it fulfill your requirements? Is it dependable—serviceable—efficient? Is it well built? Are the men who build it responsible? Is it actually worth the money you intend to invest in it? Then, will it save and earn money for you? In a word will it pay the dividends you have a right to expect? These are the vital questions. Now—turn to the Lippard-Stewart Delivery Car.

LOOK AT THE LIPPARD-STEWART FROM EVERY ANGLE. Involuntarily your mind forms the conclusion that "Here is a Real Delivery Car", and, investigation gives corroboration. It is a real car. A good car from the dealer's standpoint because it represents steady and easy sales—a quick turnover and a sure increase of business. A better car from the prospective owner's standpoint because it will deliver more goods over a wider territory at less cost per package than is possible with horse and wagon. And the best car of all from any standpoint because it is efficient in performance, low in first cost, inexpensive in upkeep and readily pays for itself in the money that it earns and saves. It is a forceful advertisement of up-to-date business methods. It gives a decided advantage over competition. It opens up greater territory for new business and the time saved in serving your old customers better and more quickly allows ample margin for obtaining new ones.

IT IS A CAR THAT GIVES SERVICE. Maximum service—because service is built in. The construction of the car proves this. It is distinctly a commercial vehicle. Examine its chassis—a delivery car chassis through and through—Not a compromise with pleasure car practice. Note the 30 H. P. Continental Motor—the rugged cone clutch—the transmission strong enough for a 50 H. P. Car. Look at the perfect spring suspension that assures easy riding—roadability and longevity to the car itself. Observe the "set" spark—the single motor control and the ready accessibility of every vital portion of the mechanism even when the car is loaded. Then take into consideration the simplicity—the refinement of construction practiced throughout the entire building of the vehicle—how easy the car is to care for—how easy to drive.

ism even when the car is loaded. Then take into consideration the simplicity—the refinement of construction practiced throughout the entire building of the vehicle—how easy the car is to care for—how easy to drive.

CONSIDER THE PRICE OF THE CAR—its sound, solid, intrinsic value. Compare the Lippard-Stewart with any car apparently competing with it. Form your own judgment as to the actual merit and worth of this car. Nowhere can you get greater value for your money. Nowhere can you find a better, stronger or more efficient delivery car at an even higher price. Put it to any test you will, the car is built to make good.

NOTE THE COMPREHENSIVE LIPPARD-STEWART LINE. A car for almost every business and each a leader in its class. Look over these many models. Consider their attractive prices: Panel body (Model P) \$1900—Express body with top \$1775—Box body \$1775—Stake body \$1775—Police Patrol \$2325—Ambulance \$2325—Omibus \$2325—Undertaker's Casket Wagon \$2300 and the Undertaker's Hearse Casket Wagon De Luxe at \$3600.

READ THESE SPECIAL FEATURES OF LIPPARD-STEWART CONSTRUCTION:—Continental 30 H. P. Motor, Eisemann Magneto, Brown-Lipe Selective Transmission, Cone Clutch, Full-Floating Timken Rear Axles, Timken Roller Bearings throughout, Special Spring Suspension, Left-Hand Drive, Pneumatic Tires 35 x 4½ Front and Rear—full equipment of Lamps and Tools.

WE WANT GOOD DEALERS EVERYWHERE. We have a splendid opportunity to offer first-class, up-to-date, energetic men—men who can measure up to our standard of integrity and business ability. If we have no dealer in your town and if you are the logical man to represent us—a man who can grasp the big possibilities of our proposition and handle it in the way it should be handled, write us instantly.

LIPPARD-STEWART MOTOR CAR CO.
Buffalo, N. Y.

CCJ

Please send catalogue and dealer's proposition immediately.

Name
Street
City State

Lippard - Stewart Motor Car Co.

Buffalo, New York

Manufacturers of 1500 lb. Delivery Cars of Every Description

AUGUST BECKER, President E. J. BARCALO, Treasurer
J. C. MILLAR, Secretary C. S. DAHLQUIST, Chief Engr.
W. F. REYNOLDS, Sales Manager

VALENTINE'S Celox Sealer

It solves the problem of making an automobile painting system at the same time **quick** and **durable**.

Its function is to permeate and seal the surfacer coat and provide a perfect non-absorbent foundation to prevent the sinking in of the subsequent coats of color varnish and finishing.

Celox Sealer produces the following remarkable results:

1. It permits the use of a quick-drying surfacer which can be sanded with the best results, inasmuch as the Celox Sealer supplies the life and elasticity necessary after the surfacer is sanded.
2. It prevents the penetration of water into the under-coats, thereby obviating any flaking or peeling due to this cause.
3. It thus protects the job in case the finish becomes scratched or dented in use.

Celox Sealer is of special value in connection with Valentine's Celox Quick System of automobile and carriage painting.

Further data on request. Use the coupon.

70 per cent. of the exhibitors at the recent Auto Show at Madison Square Garden are customers of Valentine & Company.

Valentine & Company

456 Fourth Avenue
New York

343 S. Dearborn Street
Chicago

74 Pearl Street
Boston

TRADE MARK
VALENTINE'S
VARNISHES

Fill In—Tear Off—Mail Today
VALENTINE & COMPANY, 456 Fourth Ave., N.Y.C.
Name.....
Address.....
Please send me information regarding your
Celox Quick System.
CCC8

When Writing, Please Say—"Saw Your Ad. in the C C J"

"Fitting the Truck to the Service"

Standard

3 TON TRUCK
\$2750.00



MOTOR TRUCKS suitable for coal or sand are not adaptable to stage scenery,—or telegraph poles. That's why **Standard** trucks are built in twelve lengths of loading space, ranging from eight to twenty-two feet, and four lengths of wheelbase.

MOTOR TRUCKS with gear reduction between motor and rear wheels, suitable for the smooth level pavements of cities like Detroit, Buffalo and Indianapolis, are not suitable for the hills of Cincinnati, Pittsburgh and Seattle,—that's why we have eight different gear ratios for **Standard** trucks.

RESPONSIBLE DEALERS who are interested in a real profit-making proposition that has no "Improved Theories" in it, should write us at once. You don't know of a better motor than the Continental, do you,—nor axle and jack shaft better than Timken,—nor transmission and clutch better than Brown-Lipe,—nor drive shafts and universals better than Spicer,—nor springs better than Perfection,—nor steering gear better than Gemmer? These are some of the "Standard" specifications. Just ask yourself this question:—"How would you like to compete against this array of specifications?"

Standard Motor Truck Company

Detroit, Mich.

When Writing, Please Say—"Saw Your Ad. in the C C J"



After exhaustive tests of the principal American and European trucks, the City Fuel Company and the Star Motor Delivery Company of Chicago placed an initial order for 75 of our trucks

International Motor Trucks

Proved by years of successful service

Mack 12 years in use **Saurer** 18 years in use **Hewitt** 10 years in use

14 trucks saved \$103.60 per day—\$7.40 per truck per day

Here are the figures taken from the regular cost-sheets kept by the City Fuel Company of Chicago:

For November, 1912

Average number of days worked per truck, 25

Average number of miles per day per truck,

27.92

Total number of miles run, 9,893

Average number of trips per truck, 6.6

Average number of tons per day per truck,

35.13

Total number of tons, 12,444

	Total cost	Aver. cost per truck	Cost per ton
Gasoline	\$431.76	\$30.84	\$0.0347
Lubricating Oil.....	54.79	3.91	0.0044
Wages—Helper, Driver	1,247.95	89.14	0.1003
Labor—Loading Mechanic and Repair Men.....	245.60	17.54	0.0197
Repair Parts and Material.....	146.17	10.44	0.0117
Garage	140.00	10.00	0.0112
Light and Power.....	3.64	0.26	0.0003
Insurance—Fire	58.38	4.17	0.0047
Liability	143.34	10.24	0.0115
Miscellaneous Expense	39.14	2.80	0.0031
Tires	396.52	28.32	0.0319
Depreciation, at 20%	979.81	69.99	0.0789
License	42.00	3.00	0.0033
Totals	\$3,929.10	\$280.65	\$0.3157

Total Cartage Earnings.....\$6,551.43

Net Earnings.....2,622.33

Net Earnings per Truck per Day.....7.40

Our trucks prove their superiority by overwhelming evidence—made by fleets large and small all over the world, in all kinds of business, year after year during the past 10, 12, 18 years of motor-truck history.

No one else can prove their trucks in this way, nor give you:

Nine sizes, capacities: 1, 1½, 2, 3, 4, 5, 6½, 7½ and 10 tons. Bodies for every use. Service stations with factory equipment in all large cities. Duplicate parts always assured.

Write today for facts of value in your business

International Motor Company

General Offices: Broadway and 57th St New York

Works: Allentown Pa; Plainfield N J

Sales and Service Stations: New York, Chicago, Philadelphia, Boston, Cleveland, Cincinnati, Buffalo, Baltimore, Newark, Pittsburgh, St Louis, Atlanta, Kansas City, Denver, Minneapolis, St Paul, San Francisco, Los Angeles and other large cities

Canadian Sales Agents: Canadian Fairbanks-Morse Company, Limited, Montreal



INDIANA

1—2—3 TON MODELS

¶ Every truck manufacturer wants responsible dealers to market his product. The real live responsible man can afford to hold out for the best proposition. That is what we want you to do. Look into every truck manufacturer's offer and compare it with ours. We want the best dealers in the country. Our proposition is the best from the prospective buyer's viewpoint and our dealer's contract is the fairest offered by any manufacturer. It is a real profit-making value.

¶ As to our responsibility we refer to Dun, Bradstreet or any Bank in our home city. We have a capital stock of \$150,000.00, paid in; surplus, \$125,000.00, and other resources amply large for the carrying out of our contracts, saving all discounts, and the proper conduct of our business. Our manufacturing experience covers an uninterrupted period of Fifteen (15) years in Marion, Indiana, and we refer to our record with no small degree of satisfaction and pride.

*Write us at once—delays are costly.
Get our "39 Reasons Why."*

HARWOOD-BARLEY MFG. CO.

211 INDIANA AVENUE

MARION, INDIANA

When Writing, Please Say—"Saw Your Ad. in the C C J"

Is Full Efficiency Worth as Much to You as it is to This Company?



Trucks of Boeckler Lumber Co., St. Louis—Leak-Proof Equipped

YOUR GASOLINE COMMERCIAL CAR CANNOT GIVE ITS FULL EFFICIENCY UNLESS IT IS EQUIPPED WITH LEAK-PROOF PISTON RINGS. THEY INSURE PERFECT COMPRESSION. THE CONSTRUCTION OF THE LEAK-PROOF PISTON RINGS IS SUCH THAT THEY MAKE POWER LEAKAGE A MECHANICAL IMPOSSIBILITY. EVERY OUNCE OF POWER LOST ON EACH STROKE OF EACH CYLINDER ADDS TO THE RUNNING EXPENSE OF YOUR TRUCK.

The Boeckler Lumber Co., St. Louis, equipped one of their trucks with Leak-Proof Piston Rings. The results showed such marked power increase, they immediately equipped all their trucks, as well as their salesmen's runabouts.

The results are the same whenever used. There are tens of thousands in use, saving thousands of dollars daily.

Let us put you in touch with these users of Leak-Proof Rings. Their opinions will convince you that you are running your trucks at a needless, excessive cost.

Leak-Proof Rings not only give maximum fuel economy, they also decrease carbonization by keeping back oil which might otherwise get into the cylinders. They prevent "black smoke."

STOP THAT WASTE by getting Leak-Proof Piston Rings from any supply house, garage, repair shop or from our nearest branch office.

DEALERS:—Write us for sales proposition. Every car owner is a prospect.



Manufactured by **McQUAY-NORRIS MFG. CO.**, 1309 Chestnut St. St. Louis, Mo.

Address Department "C"
BRANCH OFFICES:

NEW YORK, N. Y.—H. P. Marsh, 628 Leona Ave.; CHICAGO, ILL.—N. G. Pace, Suite 39, Merchants Bldg., 106 N. La Salle St.; PITTSBURGH, PA.—J. W. McKeen, 7630 Tings St.; KANSAS CITY, MO.—Chas. H. Eckhard, 3123 Michigan Ave.; LOS ANGELES, CAL.—W. H. Steele, 822 Central Bldg., 6th & Main Sts.; FORT WORTH, TEXAS—E. S. Moberly, 106 Bryan Street; SAN FRANCISCO, CAL.—Wm. B. Godfrey, 368 Market Street.

When Writing, Please Say—"Saw Your Ad. in the C C J"



*They once looked good, we never did surmise—
Their days were numbered—but now we're wise.
The truck has chased the livery man
And BOWSER has displaced the can.*

You displaced your horse-drawn vehicles because convinced that the truck was quicker, cheaper, cleaner and more economical for the distance traveled and the loads hauled and, in fact, better in every way and, since using, your conviction has undoubtedly been vindicated.

But are you really getting maximum service from your gasoline trucks? You may reasonably think so from the fact that, comparing it with the horse-drawn vehicles, the figures are all in favor of the gasoline truck. Sometimes figures don't tell all the story.

SOME THINGS WITH WHICH YOU WILL AGREE

Gasoline engines of today are practically perfect—they are built to develop different horse power according to the bore and stroke—they develop that horse power if supplied with the right kind of gasoline, that is—gasoline that contains the maximum power-driving vapor. It is the unreleased vapor you buy—otherwise why not run your trucks on naphtha and save more than half your present bills.

BOWSER SAFE OIL STORAGE SYSTEMS

will keep all the power-producing vapor in your gasoline and all the "velvet" in your oils. Why? Because twenty-eight years of "know how" are built into them.

Bowser outfits are tireless iron clerks that are at your instant service twenty-four hours a day—they never make a mistake and accurately measure and record every drop bought and used.

OVER A MILLION BOWSER USERS AND BOOSTERS

Do you think this army of friends could exist without a cause? Write for our free illustrated book and learn more about this subject. It will save your liquid money—your oils—just as the knowledge of finance saves your cash. This inquiry does not obligate you in the least. Do not hesitate to write for it today.

S. F. BOWSER & CO., Inc.

HOME PLANT AND GENERAL OFFICES

Box 2118,

FORT WAYNE, IND., U. S. A.

BRANCHES:

ALBANY

ATLANTA

NEW YORK

CHICAGO

ST. LOUIS

DALLAS

SAN FRANCISCO

HARRISBURG

TORONTO

MINNEAPOLIS

Original patentees and manufacturers of standard, self-measuring, hand and power-driven pumps, large and small tanks, gasoline and oil storage and distributing systems, self-registering pipe-line measures, oil-filtering and circulating systems, dry-cleaner's systems, etc.

ESTABLISHED 1885

When Writing, Please Say—"Saw Your Ad. in the C C J"



Made in
Four Sizes

Heavy gears for fire
apparatus a specialty

Send for blue prints

Four sizes for trucks
 Model A Capacity 10,000 lbs.
 B " " " 15,000 " " 12 tons
 C " " " 20,000 " " 14 tons
 E " " " 45,000 " " 30 tons

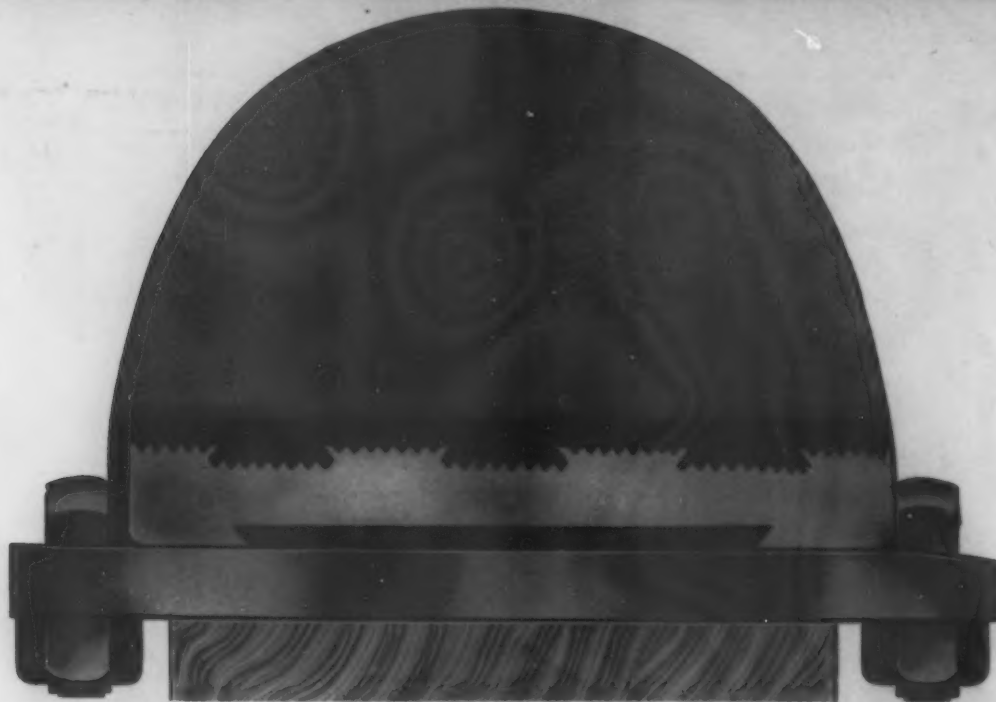
Two models for pleasure cars
 Model A for small cars
 Model B for large cars

The Lavigne Gear Company
 STATION 2A
 Racine, Wisconsin

When Writing, Please Say—"Saw Your Ad. in the C C J"

POLACK TYRES

Assure Truck Service



TYRE MOUNTED ON FLAIN BAND-RIM WITHOUT FLANGES

TRUCK MANUFACTURERS DEPEND ON
REPEAT ORDERS FOR THEIR PROFITS.

REPEAT ORDERS RESULT FROM SATIS-
FACTORY TRUCK SERVICE.

ALL USERS EXPRESS SATISFACTION
WITH POLACK TYRES BECAUSE OUR
MINIMUM GUARANTEE OF 8,000 AND
10,000 MILES IS INVARIABLY EXCEEDED.



MOST OF THE BEST TRUCK MANU-
FACTURERS NOW INCLUDE POLACK
TYRES IN THEIR STANDARD EQUIP-
MENT.

WHY NOT YOU? — AND ASSURE
REPEAT ORDERS.

MADE IN S. A. E. AND EUROPEAN
STANDARDS.

SEE OUR EXHIBIT AT BOSTON SHOW, SPACE F 502.

POLACK TYRE & RUBBER CO.

Principal Offices:

246 West 59th Street, New York

Factory: Bridgeport, Conn.

Branches and Service Stations:

Boston
Philadelphia

Chicago
Kansas City

St. Louis
Baltimore

Washington
Detroit

When Writing, Please Say—"Saw Your Ad. in the C C J"

ARMY TAKES NO CHANCES WITH JACK-SHAFT BRAKES

SHELDON DOUBLE BRAKES ON REAR WHEELS PASS GOVERNMENT SPECIFICATIONS



Chief of Quartermasters' Corps of War Department issues specifications for Motor Trucks for Army use.

"BRAKES—Two sets, both attached to rear wheels; one set operated by pedal, other by lever."

The Army Takes No Chances With Jack-Shaft Brakes; by specifying both BRAKES ON REAR WHEELS.

SHELDON DOUBLE BRAKES ON REAR WHEELS conform to Government Specifications.

Equip your trucks with SHELDON BRAKES, and bid on the Army Requirements.

A Jack-Shaft Brake is no stronger than the chains. If the chain breaks or jumps the sprocket, will the truck stop? ? ? ? ? ?

You can never depend on jack-shaft brakes skidding the wheels—Either one of SHELDON'S DOUBLE BRAKES WILL DO IT.

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

CHICAGO OFFICE—68 East 12th St.

DETROIT OFFICE—1315 Woodward Ave.

SAN FRANCISCO OFFICE—444 Market St.



Capacity One Ton

Price of Chassis \$2000

HERE IS THE BEST ONE-TON TRUCK ON THE MARKET. THE Selden Truck has set an absolutely new standard for one-ton trucks.

It is designed and constructed to meet the rigid requirements of trucking service. It is not a bundle wagon, but a real truck for heavy work, and is recognized as the highest type of commercial car in its class.

THE SELDEN TRUCK

Is Sold on Time Payments

And is within easy reach of the thousands of merchants and manufacturers who don't find it convenient to pay cash. Our plan provides a simple and easy way of owning a truck of the highest efficiency, without imposing upon the purchaser any heavy financial burden.

*Our Agency Proposition is the Most Attractive Ever Offered
Write at Once for Catalog and Details of Our Sales Plan*

SELDEN TRUCK SALES COMPANY
207 East Avenue, ROCHESTER, N. Y.

When Writing, Please Say—"Saw Your Ad. in the C C J"

**We Manufactured Wireless
Tires Three Years Before Any
Other Manufacturer**

**WHY permit inexperienced Tire
Manufacturers to experiment on
YOUR trucks at YOUR expense?**



GIBNEY

WIRELESS TIRES

are

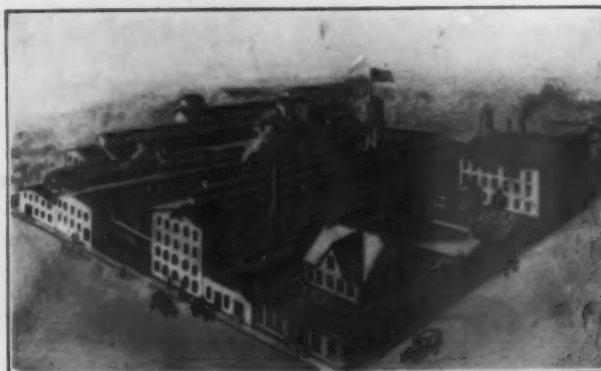
Time-Tried and Service-Proven

—the tires that have established a national reputation for continuous day-in and day-out service—for the durability that means economy.

Write us to-day for quotations on gradually equipping your motor delivery system with GIBNEY WIRELESS TIRES—as needed

GIBNEY
Tire & Rubber Co.

Philadelphia
New York
Chicago, Ill.



FACTORY: CONSHOHOCKEN, PA.

Tires of Guaranteed Efficiency

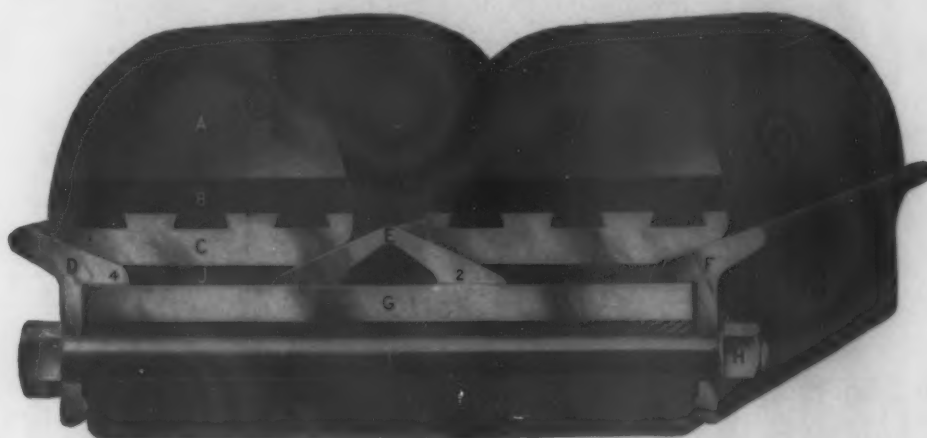
United States Standard Demountable Tires have the well-earned distinction of being the most efficient motor truck tires on the market today.

This is an important statement to every business man who has a haulage problem on his hands.

Efficiency is the watchword of the modern business and mechanical world today. The concerns which occupy the front rank are the concerns that have come the closest to making every man, machine and appliance, thruout their organizations 100% efficient.

Clearly this rule applies to the delivery and haulage departments as well as to the manufacturing division.

If you are compelled periodically to lay up your trucks and tie up your deliveries hours or days at a time while a wheel is away at some distant repair station for a tire replacement, you have a weak, inefficient spot in your delivery system that would not be tolerated a day if it occurred in a modern manufacturing plant.



UNITED STATES STANDARD MOTOR TRUCK TIRES

(Demountable)

have forever done away with inefficiency of this sort.

Here is a tire that can be replaced in your own garage by the driver himself after working hours. And it will take him only fifteen minutes to do the job (even for dual equipment).

Expensive, troublesome, repair-shop delays are a thing of the past. Carry a spare tire on your truck and you are independent.

Furthermore, United States Tires bear an unprecedented mileage guarantee for 10,000 miles of service (conditional upon its being used within one year's time) that will enable you to put your trucks on a lower cost per mile service than you have ever been able to do before.

From the standpoint of both time-saving and money-saving, United States Standard Tires are well nigh 100% efficient.

UNITED STATES TIRE COMPANY, NEW YORK

MAIS



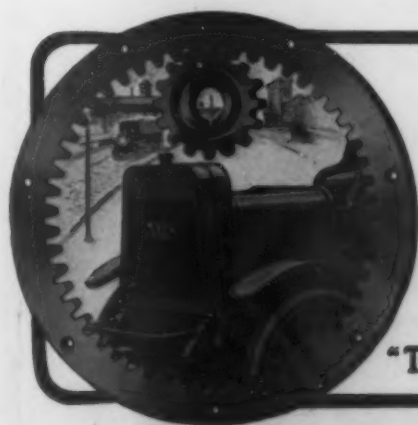
The powerful, long-lived "Mais," fit for every service.

The most economical truck built, due to its Internal Gear Drive, which transmits the full efficiency of the engine direct to the driving wheels without any loss of power.

When worked side by side with other makes it has proved over and over again to be the "Bulldog of the Fleet."

The best buy for the user and the best proposition for the dealer because it gives uninterrupted service at the lowest cost.

Some good territory is still open. Write us.



MAIS

**MOTOR TRUCK COMPANY
INDIANAPOLIS... INDIANA**

"The Truck Which Popularized The Internal Gear Rear Axle Drive"

The stockholders of the Mais Motor Truck Co. are successful business men, who are backing with their millions a product which they know by experience has exceptional merit. Their faith is assurance that you safeguard your truck investment if you buy the Mais.

When Writing, Please Say—"Saw Your Ad. in the C C J"



Announcement

THE LIGHT COMMERCIAL CAR COMPANY ANNOUNCE THE LIGHT COMMERCIAL CAR ON THE MARKET, WEDNESDAY, JANUARY FIRST, NINETEEN HUNDRED THIRTEEN, AT MARIETTA, PENNSYLVANIA, AND CORDIALLY INVITE YOUR EXAMINATION AND INSPECTION OF THE MERITS OF THEIR CAR AND VERIFY THE FACTS.

THAT IT IS THE *FIRST* AND *ONLY* REALLY ONE HUNDRED PER CENT EFFICIENCY COMMERCIAL SERVICE CAR EVER PRODUCED;

THAT IT IS THE *ONLY* CAR FOR EIGHTY-FIVE PER CENT OF ALL LOCAL DELIVERY BUSINESS IN THE WORLD; AND

THAT HAVING BEEN DEVELOPED BY A DELIVERY SERVICE COMPANY FOR THE ATTAINMENT OF IDEAL AND PERFECTLY EFFICIENT SERVICE CONDITIONS AS THE DELIVERY SERVICE COMPANY UNDERSTOOD THEM, *IT* IS THE SIMPLEST, MOST PERFECT, DURABLE, ECONOMICAL, EFFICIENT, SALEABLE, ATTRACTIVE AND NEEDED MOTOR CAR FOR LOCAL TRANSPORTATION EVER CONCEIVED.

SPECIFICATIONS

Weight: 450 pounds.
Capacity: 600 to 800 pounds—up all hills.
Speeds: (2) up to 35 miles per hour on high; up to 8 miles per hour on low.
Mileage: 50 miles to gallon of gasoline.
Lubricants: Self-acting.
Tires: 26 x 3, Heavy Automobile.
Transmission: Roller friction.
Motor: 6 H. P., Single cylinder; air cooled; valveless.
Wheel Base: 46" x 60".
Van: 44" x 28" x 26". This will be made, however, to suit the requirements of the customer, plus whatever difference the cost might be.
PRICE, \$450.00.

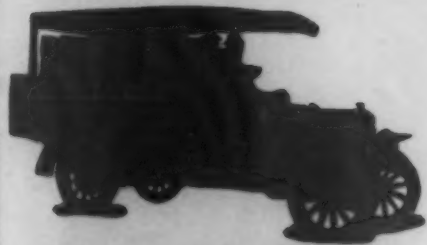
NO

gears to break.
belts to wear.
chains to tear.
order to forget, or go wrong, consequently damaging motor.
oil or grease cups to need constant attention, and to forget, thus damaging moving parts of the car, without which the car is useless.
OILING AT ALL.
clutch to oil, roll, tighten or slip.
clutch springs to weaken or break.
universal joints.
complicated differential gears to oil, wear and break.
valves to grind and replace and need constant attention.
cams, cam shafts, gears, springs, pins in motor.
shafts to break or bearings to be kept well oiled.

ONLY THREE REVOLVING PARTS

LIGHT COMMERCIAL CAR CO.
MARIETTA, PENNSYLVANIA





ROWE TRUCKS

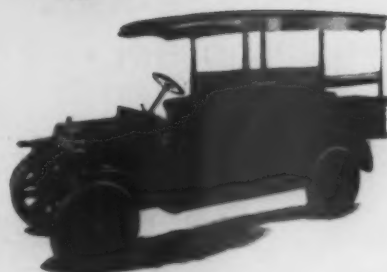


IN EVERY LINE
OF BUSINESS.
BUILT IN 1 TO 5
TONS CAPAC-
ITY. WORM OR
CHAIN. BUILT
BY ENGINEERS
FOR CONTINU-
OUS, ECONOMI-
CAL SERVICE.
BODY TO SUIT
YOUR BUSINESS.

Agents wanted
for new, unfilled
territory.



ROWE
MOTOR MFG. CO.
COATESVILLE PA.



LANGE MOTOR TRUCKS Made and Made Good at Pittsburgh

Specifications of the "Lange" Model B Two Ten Truck

MOTOR—Specially designed for commercial truck work, having long stroke, extra large bearings and developing 33 horsepower. Bore 4 1/2", stroke 5 1/2". Cylinders cast en bloc, vertical "L" head type. Valve mechanism entirely enclosed and dust proof. All parts absolutely interchangeable.

OILING—Positive plunger pump system with constant level at motor arranged with sight feed at dash. All moving parts of the truck fitted with liberal sized grease cups, placed easy of access.

COOLING SYSTEM—Thermo-syphon, with genuine honey-comb radiator. Specially designed to allow free, unretarded flow of water.

CARBURETOR—Type "A" 1 1/2" Stromberg. Water jacketed. Ignition—Two independent systems. Bosch high tension magneto and four unit Connecticut coil battery system.

GASOLINE CAPACITY—Heavy tank, lock sealed, capacity 20 gallons, fitted with sight gauge.

CLUTCH—Universal Disc clutch.

TRANSMISSION—Selective type, three speeds forward and one reverse. Driving gears are always in mesh. On high speed all gears and countershaft are idle. Jackshaft spindles and differential are entirely enclosed and integral with gear case.

DRIVE—Propeller shaft placed in straight line with motor using two Blood universal joints (one at each end), one of which is a sliding joint. Chain driven from jackshaft to rear wheels.

STEERING GEAR—Located on left side. Shifting and emergency brake lever located at the driver's right in center of foot board, allowing driver to enter from either side of truck.

CONTROL—Spark and throttle on top of steering column. Left foot pedal controls clutch, right foot pedal controls external brake operating on jackshaft.

AXLES—Front is I-beam section, rear is square 2 1/2" x 3", hand forged. Roller bearings at spindles. Axles are Chrome Vanadium.

SPRINGS—Made of Vanadium steel, especially arched and shaped, 2 1/2" front, 3" rear. Truck type. Bronze bushed.

WHEELS—Hoopes Bro. & Darlington make. Wood artillery type, front 2" spoke, rear 3 1/2" spoke, 14 spokes to each wheel.

TIRES—36x4" front, 38x3" dual or 38x3 1/2" rear, solid Sange type.

BRAKES—Two act. One external set operating on jackshaft. One internal set operating on rear hubs. Both brakes are of generous dimensions and are easily adjusted.

FRAME—5" channel steel frame of liberal cross section, all being hot riveted and well reinforced. Width 37".

WHEELBASE—136 inches, tread 60 inches.

LOAD SPACE—Back of seat, 10 feet by 4 1/2 feet.

EQUIPMENT—Two side oil lamps and one tail lamp, set of tools, horn and jack.

MISCELLANEOUS—Motor is under hood at front, making it very accessible for adjustments. Nickel alloy steel bolts are used where necessary. All bolts and nuts are castellated and cotter keyed. Nickel or Vanadium steel is used in all parts where unusual strain must be overcome.

PRICE—\$2000.00 F.O.B. Pittsburgh, Pa.—Body extra.



LANGE MOTOR TRUCK COMPANY PITTSBURGH, PA.



GOOD WHEEL WHYS

¶ Last month, we referred to the three factors in successful wheel building, material, construction, and assembly, and why it is essential that each of these should be high grade. Too great stress cannot be put on the importance of having wheels strong, safe, and enduring—the kind that will stand up.

¶ The wheels constitute the real factor of safety in a motor vehicle; for depending upon their strength and endurance, the lives of passengers and the value of load are safe or unsafe. They are the great burden bearers; they take all the bumps and twists and skids, and carry all the load. If they are inefficient, if they will not maintain under extraordinary strains, the economy of motor vehicle service is apt to become negative.

¶ Every thoughtful buyer of a motor vehicle will look first to see that it is equipped with wheels that are known to be strong and safe, wheels that have been tried and found efficient.

¶ Schwarz Wheels are used as standard equipment by all careful manufacturers, irrespective of the selling price of their cars. They know that the material is carefully selected from the best stock; that the design and construction are absolutely correct; that the interlocking spokes, found only in Schwarz Wheels, form a tight, immovable assembly, which cannot loosen under the most severe strains; that the spoke center is certain, and the wheel will always run true. Schwarz Wheels have been weighed in the balance, and their superiority established.

Strongest, Safest, Most Economical

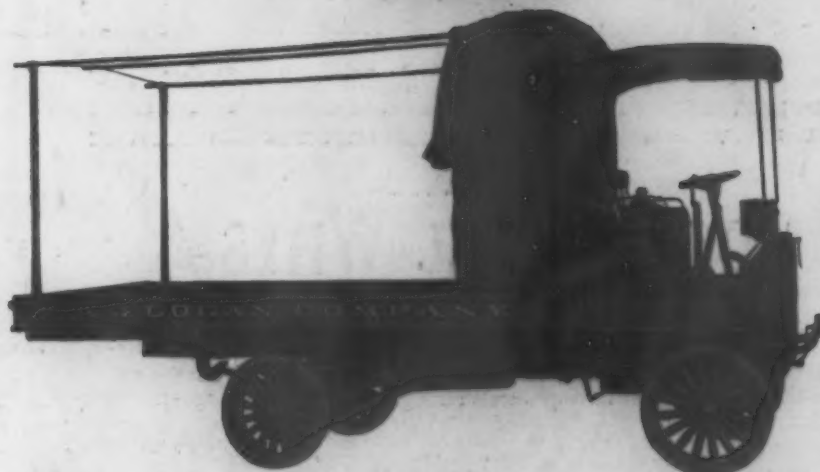
The Universal Verdict of All Automobile Engineers

Consult Us. Write for Literature

THE SCHWARZ WHEEL CO., Frankford, Phila., Pa.

When Writing, Please Say—"Saw Your Ad. in the C C J"

Curtis



CAPABLE
Guaranteed for
25% overload.

CONVENIENT
Engine and all
working parts ac-
cessible.

CORRECT
Perfect alignment
insures long and
efficient service.

1 1/2 TONS

CAPACITY

2 1/2 TONS

CONSERVATIVE and DISCRIMINATING buyers
are easily convinced that the CURTIS TRUCK is built for
SERVICE.

**Curtis Trucks are
sold on their merits**

Good propositions open to Reliable Agents. Write for
catalog "C".



Manufactured by

PITTSBURGH MACHINE TOOL COMPANY, Braddock, Pa.

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The Wichita Truck in Cuba



STANDARD MODEL
Wichita Falls Motor Co.
Telephone A- 5122

E. M. PERKINS
Wichita Falls Motor Co.
Wichita Falls, Texas, U.S.A.

Wichita Falls, Texas, U.S.A.

Jan. 27/13

Mr. J. C. Gilbertson, Genl. Mgr.,
Wichita Falls Motor Co.,
Wichita Falls, Texas, U.S.A.

Dear Sirs:-

We beg to advise that we have had one of your ten ton trucks in use now for over six months and we are highly pleased at the work it is doing for us.

We have 5 of the finest teams in Indiana and your truck does more work in a day than our three best teams. We have had no break down or repair bill on this truck since arrival. We intend to place an order with you for another truck in the near future.

Yours very truly,
E. M. Perkins
E. M. Perkins

Brief Specifications

Model A

**One Ton, 25 H. P.
Chassis, \$1650.00**

Model B

**Two Ton, 30 H. P.
Chassis, \$2100.00**

Bosch or Eisemann Ignition.
Pressed-Steel Frame.
Three-Speed Sliding-Gear Transmission.
Wheelbase up to 144".
Standard Equipment includes tools, horn,
oil lamps, dash searchlight, gas tank,
Veeder Hub Odometer, etc.

**Write us for catalogue and agency
proposition**

WICHITA FALLS MOTOR CO., Wichita Falls, Texas

ALL THIS INFORMATION
About ALL CARS for ONLY \$1



1913 Table of Specifications of Gasoline Commercial Cars

PRICE, \$1.00

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THE COMMERCIAL
CAR JOURNAL

Published in Philadelphia

Every Specification and Measurement of Every
Commercial Car Manufactured.

Absolutely Complete from Wheel Base
to Size of Spark Plug.

*How many times would you have given
ten times its price for the facts about just
one part of one car?*

Here is the measurement, capacity, tire equipment, control, cost, **everything**—about each and every commercial car manufactured, and costs you only \$1. Furnished as a wall-hanger, 4' x 2'-8", or in a convenient pocket size.

We also publish complete specifications of Pleasure Cars at the same price, in both hanger and pocket form. State which you desire, the wall-hanger or pocketbook size. If you order both the Pleasure Car and Commercial Car Specification Charts at one time, remit \$1.50, which is the special combination price. Order today before you forget.

CHILTON COMPANY, PHILADELPHIA

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That Waste Underneath Costs You Money



Will Positively Stop That Waste

THE secret is its high fire test of 250° along with the fact that it has a cold test of 50° below zero. Its nearest competitor, having a low, cold test, has a high fire test of only 120°.

MOTORLIGHT GREASE is guaranteed 2500 miles in any transmission. Figure out what a saving this is over your present cost.

Does not channel nor gum the gears.

Keeps the transmission, differentials and bearings of your truck properly lubricated at all times, preventing wear and enables your car to give you 100% efficiency.

Write us at once. We will furnish samples to prove our claims.

Petroleum Coke Co.

Edgemont & Venango Sts. :: :: :: Philadelphia, Pa.

SCHAFER Ball Bearings

UNIVERSAL
IN USE

SATISFACTION
TO USERS



MANUFACTURERS cannot better introduce their trucks to the discriminating users than to say—*they are "SCHAFER equipped."*

The quality of SCHAFER BALL BEARINGS has long been established because of their perfect design, their honest construction, and the high quality of their material.

No matter what conditions they may be subjected to, SCHAFER BALL BEARINGS stand up and give that perfect service which only the highest grade bearings can give.

BARTHEL & DALY

42 Broadway, New York City

\$986

Model "C"
Express Body
F. O. B.
Cincinnati, O.
Completely
Equipped

**\$986**

Model "D"
Stake Body
F. O. B.
Cincinnati, O.
Completely
Equipped



-WILL DELIVER THE GOODS-

THE STEWART ONE-TON TRUCK HAS SOLVED ALL THE DELIVERY PROBLEMS. Hitherto it has been necessary to pay BIG PRICES for trucks of the STEWART'S carrying capacity. STEWART'S PRICES have brought these initial costs tumbling down to a level that puts them in the reach of every horse-drawn vehicle user.

Constructed for a 50 per cent overload and Guaranteed for one year by THE STEWART IRON WORKS CO., a firm of unlimited resources, and a reputation backed up by 27 years of actual experience.

NOW, MR. DEALER—Here is the Biggest Money-Making Chance in the automobile field today. A ONE-TON TRUCK COMPLETE and selling for less than \$1000. Your commission is a profit, not a loan.

-WHERE THE STEWART TRUCKS ARE BUILT-



THE STEWART IRON WORKS COMPANY, CINCINNATI, OHIO

MAIN OFFICE AND FACTORY, "COVINGTON"

When Writing, Please Say—"Saw Your Ad. in the C C J"



United States Express have been operating Lansden Trucks for 6 years
Adams Express have 168 Lansden Trucks—some 10 years old and are still giving good service

Ten Years Continued Service

Has Proven the Lansden Electric Trucks to be the most reliable and Economic means of Transportation in all Lines of Trade.

Every effort in the design and construction of Lansden Vehicles is directed toward simplicity, reliability, and increased mileage and carrying capacity, with reduction of weight and current consumption. All of these tend toward better service and therefore lessen cost of operation and up-keep. In proportion to load capacity and mileage ratings the Lansden is the lightest high-grade electric commercial vehicle on the market.

The Lansden Electrics do not require a force of experts or a machine shop to operate and maintain them. They are operated at one-third less average cost than the gasoline. They will outlast any three gasoline trucks, with one-tenth the interruption of service.

THE LANSDEN COMPANY
NEWARK, NEW JERSEY

CRAMP

Gear-Bronzes



1-TON GEAR

Cramp's metals will give longer life—resist wear and abrasion better—will withstand excessive strain and shock and heavier starting torque than any other gearing metals. Through merit alone, Cramp's metals have achieved dominant place as the world's best metals.

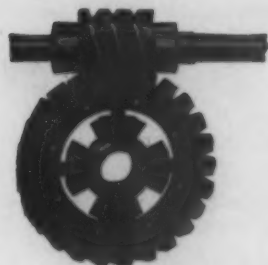
It is no advantage to import metals, we manufacture absolutely the best and save you duty, freight and time.

We furnish the metals and castings for Hindley Spiral Gears.

Write us—we can show you how Cramp's metals will better your products.

The William Cramp & Sons Ship & Engine Building Co.
PHILADELPHIA

When Writing, Please Say—"Saw Your Ad. in the C C J"



2-TON GEAR



3-TON GEAR



5-TON GEAR

Metals look much alike. Before buying metals it is vitally important to consider the experience and reputation of the manufacturer, to know that the metals you use possess the qualities that will stand up in service and give the maximum of efficiency and wear.

The name CRAMP has for nearly a century set the highest standard in bearing metals. Cramp's metals are the result of almost a hundred years' experience. They have been used during these hundred years for worm drives for every type of machine, from turret turning gear to lifting bridges, elevators, marine railways, etc.



Hyatt Quiet Bearings



Hyatt Flexible Rollers will not crush under load because of their being hollow. The strength of these rollers is dependent upon the section of the steel out of which it is formed as well as the elastic limit of that material.

Every size bearing is capable of carrying a certain load at a certain speed. If the carrying capacity is greatly overreached, the bearing cannot be depended upon to give permanent satisfaction. Any other automobile member subjected to excessive stress will fail under similar conditions. It is simply a matter of proper engineering.

When reasonably well mounted and operated under its proper duty, the Hyatt Roller Bearing lends itself to practical conditions as no other can. When subjected to faulty mounting—imperfect alignment—unreasonable abuse—and overloading, no other bearing is even comparable.

HYATT ROLLER BEARING CO.
DETROIT, MICHIGAN
WINDY, NEWARK, NEW JERSEY

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The Big Economy In Using Electric Vehicles

depends largely on the battery with which cars are equipped. The ability to climb heavy grades, haul big loads, give satisfactory service in hot or cold weather and the cost of maintenance and operation are questions that to a *very great degree* relate to the battery.

The 4 "Exide" Batteries

"Exide", "Hycap-Exide", "Tbin-Exide", "Ironclad-Exide"

are the result of years of study and experience in the manufacture of vehicle batteries by the *oldest* and *largest* storage battery maker in the country. Each of these batteries has its special field of usefulness depending upon the type of car and the service for which it is used.

"Exide" Batteries will run an Electric Car—commercial or pleasure—*more miles with less expense, less attention and with a greater continuity of service* than any other batteries made. The best proof of their superiority is the fact that a large majority of the prominent electric vehicle makers *all* use and endorse these "Exide" Batteries.

Investigate the electric vehicle as applied to your business. Find out how much it will *save* you either for light delivery or heavy haulage work. Remember the importance of the battery. *Insist* on one of the "Exide" Batteries.

Get our battery publications and our advice on the best type of battery for the car you will select or that you now use. Our nearest office is at your service.

THE ELECTRIC STORAGE BATTERY CO.

Manufacturer of

The "Chloride Accumulator," The "Tudor Accumulator," The "Exide,"
"Hycap-Exide," "Tbin-Exide," and "Ironclad-Exide" Batteries.

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St. Louis Cleveland Atlanta Detroit 1898-1913 Los Angeles Portland, Ore. Toronto

876 "Exide" Distributors 9 "Exide" Depots "Exide" Inspection Corps

SIMPLE CERTAIN RELIABLE ATLANTIC Electric Trucks

The Atlantic Truck is justly entitled to the Appellation
"The Long-Distance Electric Truck"

¶ The amount of electricity stored in a Storage Battery is a fixed quantity. Consequently, that Truck which uses the least quantity of electricity in going one mile, will travel more miles per day than any other Truck using such fixed quantity of power.

¶ The reason why the Atlantic meets this requirement is because the best engineering talent in the United States was employed to design it.

Built in four capacities — 1, 2, 3½ and 5 tons.

Our Engineering Department will help solve your transportation problems.



ATLANTIC VEHICLE COMPANY

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NEWARK, N.J.



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The Proper Battery for the Electric Vehicle, for Ignition, Lighting, Starting



is the light-weight service storage battery—
a non-deteriorating element and non-corrosive electrolyte
in an unbreakable, electrically welded can.

THE EDISON STORAGE BATTERY

is essential to the equipment of the thoroughly modern power plant
because it is extremely reliable, durable, efficient for service.

Service efficiency is positively delivered to the purchaser by the guar-
antee of the Edison Storage Battery Company.

Have you your copies of the literature?

EDISON STORAGE BATTERY COMPANY

141 Lakeside Avenue, Orange, N. J.



BALL ~ BEARINGS



HB DWF

The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclu-
sively to ball bearing manufacture. Enlarging and improving
facilities, product and capacity for distribution.

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Impartial Mechanical

The **Servis Recorder** gives you supervision at all times over your delivery and shipping equipment.

The **Servis Recorder** supervision is mechanical—therefore accurate, impartial and economical.

The **Servis Recorder** tells you when the vehicle began and stopped work—

The number of hours it was in actual service.

How much delay there was in loading—

How many stops were made—

How much time was taken for lunch—

How much overtime, if any, was made by the driver.

Lets you know any unauthorized use of the vehicle.

The Servis Recorder Company

2423 East 105th Street
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Branches in Twelve Cities

The **Servis Recorder** has been adopted by more than 35 Railroads for use on switching and transfer locomotives.



Economical Supervision

Permits you with certainty to lay off vehicles in dull season—Raises the standard of efficiency of your employees—

The **Servis Recorder** is self-contained. It is not connected with the running gear or motor in any way.

The **Servis Recorder** works equally well on horse wagons, motor trucks or sleds.

It is the one dependable device that never fails.

What the **Servis Recorder** has done—what it will do for you—will be gladly told upon request. That it will save money for you is certain. To inquire how will not oblige you.

We invite correspondence.

Hydraulic Pressed Steel Co.



TRUCK FRAMES

1/2 TON TO 10 TON

HYDRAULIC PRESSED STEEL CO.

CLEVELAND, OHIO

R. B. McMILLAN, General Sales Agent, Chicago, Ill.

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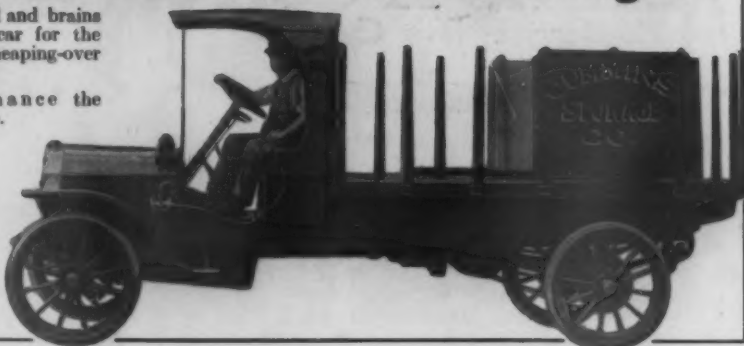
The "MODERN" Truck Will Strike You Just Right!

It's built right. The stuff is in it—both material and brains—minus all fuss and jim-cracks. A practical car for the practical buyer—the man who likes to get heaping-over measure for his money.

The closer you investigate it the better chance the "MODERN" has of landing in your delivery garage.

MR. DEALER: An agency for the "MODERN" not only makes selling easy, but it brings you prestige. The "MODERN" is a live proposition for a live agent. Write today for some interesting facts we have to present to men who are in a position to sell trucks. And you men who are not selling trucks, we've got something to say to you. We say it in a way that grips and the illustrations that go with the talk will make you sit up. Write today.

The Bowling Green Motor Car Company
Dept. A Bowling Green, Ohio



The Commercial Car Journal

is the logical paper for every man to read who contemplates buying or selling commercial motor cars.

It is brimful of essential information.

The Commercial Car Owner will also find many suggestions in it that will make his driving more efficient.

Send for a sample copy

Commercial Car Journal

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AUTOMOBILE WHEELS for PLEASURE CARS and TRUCKS

*Repairing and truing old wheels
a specialty*

Experimental wheels a specialty

*We furnish and apply any style
demountable or detachable
rim or tire*

BEST ON EARTH—KANTSAMORE
ESTABLISHED 1885

PHINEAS JONES & COMPANY

305-313 Market Street

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Branch Factory: 12th Avenue and 55th Street, New York City

Adams Trucks

"Deliver the Goods"



(Bodies built to owners' specifications)

Economy of Maintenance Starts With the Building of the Truck

Reliability in a truck begins at the designer's drafting board. The Adams is all Adams; every vital feature is our own and represents a survival of the fittest in this industry.

We have designed and built trucks for more than one hundred different classes of industry, which are using them with complete satisfaction in both continents.

Under the trim French type of hood, you will find an easily accessible motor whose ample power is transmitted along straight-line connections without any complications that might puzzle the average driver.

The left-hand drive and extreme simplicity of all the working parts of the Adams appeal instantly to the man who wants to buy real service in a motor truck.

THE ADAMS BROTHERS COMPANY

435 West Main Cross Street, Findlay, Ohio

First American Truck Manufacturers to use the French Type Hood.
(Radiator rear of the motor.)

We Ship on Approval

prepay freight and allow

30 DAYS FREE TRIAL

The best "Nonakid" puncture-proof device on earth for Commercial Cars.

Try them at our expense. Be your own judge—don't take anyone's word for it. "The proof of the pudding is in the eating."

It Only Costs One Cent

to learn our unheard of prices and marvelous guarantee on "Bricton" Detachable Treads.

Write today for full particulars

The Bricton Mfg. Company

4533 BRICTON BLDG.

BROOKINGS, S. D.

Motor Truck Bands

MADE WITHIN THE FOLLOWING

Dimensional Tolerances

(ADOPTED BY THE SOCIETY OF AUTOMOBILE ENG.)

1.—Tolerance in circumference of felloe band:

	Plus	Minus
Before application to wheel . . .	1-32"	1-32"
After " " " " . . .	1-16"	1-32"

Variation from precise measurement shall be uniform over entire width of band.

2.—Tolerance in width of felloe band:

	Plus	Minus
Up to and including 4"	1-32"	1-32"
4-1-16" to 6"	3-64"	3-64"
6-1-16" to 12"	1-16"	1-16"

3.—Variation in trueness of band when placed on surface plate: Band shall touch at all points within 1-32" up to and including 6" width. Over 6" width within 1-16".

4.—Variation in thickness of band: .006" plus or minus.

5.—Trueness to round. The radial tolerance on the wheel when felloe band is applied shall be 1-16" plus or minus. This plus or minus tolerance must not occur at diametrically opposite points. There shall be no flat spots or kinks in felloe band on the finished wheel.

The Standard Welding Company

CLEVELAND

NEW YORK

CHICAGO

DETROIT

VICTOR BLOCK TIRES

WHY?

Because—Uninterrupted service is assured as the result of the simplicity of fastening, which permits the removal of a block by simply taking out one bolt.

Because—Perfect traction eliminates the necessity for chains to prevent skidding.

Because—Each block is individual, preventing the generation of heat and increasing the life of the tire.

Because—The VICTOR is the only block tire that is full size or Oversize that is absolutely anchored. We recommend the same size equipment as the endless.

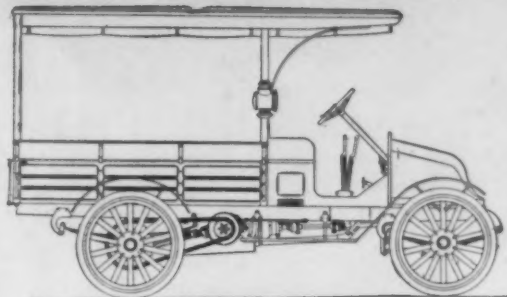
VICTOR ENDLESS TIRE

is exceptionally efficient for trucks of two-ton capacity and under and for front wheels of heavy-duty trucks. It adheres perfectly to the base, does not creep upon the wheel and gives the full wear of the rubber down to the flanges.

Write for new VICTOR Booklet

THE VICTOR RUBBER CO.

SPRINGFIELD, OHIO

Simple—Reliable—Economical
The MOORE Truck
Capacity 1600 Pounds

The Moore Truck is designed to furnish reliable service at low upkeep expense. It is so simple that no high-priced man is required either to operate it or to keep it in condition. All its work is done quietly at a low motor speed which reduces noise, vibration and wear to a minimum. Write for descriptive circular.

PALMER-MOORE COMPANY
 SYRACUSE, N. Y.


All Roads Are Level

to the truck that places its reliance upon

THE
RUTEMBER
MOTOR


This is the motor that is built for service, speed and silent performance. It cuts your motor costs in half and doubles your efficiency. Write for the record of this motor and for list of power trucks carrying the RUTEMBER.

The Rutember Motor Co., Marion, Ind.

LALLY



LALLY PATENTED DUMPING BODIES will increase the efficiency of your truck 100%. They cut down the loading and unloading time and require only one man to handle them. We have special designed bodies for handling every known product. We have been making special bodies for all kinds of vehicles for the last thirty years. Our experience is at your service.

Write us about your requirements

LALLY COMMERCIAL BODY COMPANY
 21-23 West First Street South Boston, Mass.

BODIES

We Want Live, Business-Getting
AGENTS AND DEALERS
 In Every County in the United States
 To Handle Our Product in 1913.

There are more
MERCURY HALF TON TRUCKS

In use in Chicago than any other kind—
 You can equal this record in your Territory.

The Price
 of this
 Model

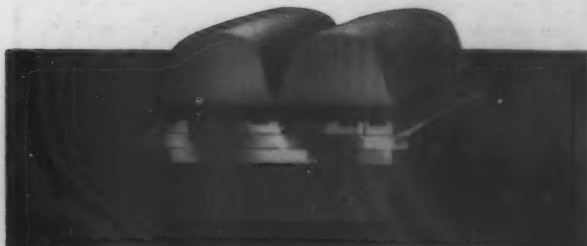
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 Complete
 Catalogue
 and Agency
 Terms



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THE MERCURY MANUFACTURING COMPANY
 4106 So. Halsted St. Chicago, U. S. A.



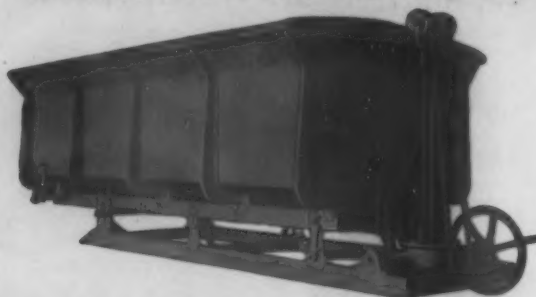
**Increase the Efficiency
of Your Motor Trucks**

by keeping them in continual service. The Republic Steel Base Motor Truck Tire will keep them on the road day after day, for its unit construction, combined with the manner in which it is fastened onto the wheel, makes misplacement and slipping off impossible. And the rubber tread, which is a highly perfected compound, yields maximum resiliency and wear, giving you continuous time and money-saving service. Let us give you the full facts and figure on your requirements.

THE REPUBLIC RUBBER CO., Youngstown, Ohio
Branches and Agencies in the Principal Cities

**REPUBLIC
STEEL BASE
MOTOR TRUCK TIRE**

A Steel Truck Body That Is Worthy of Your Truck



Budd ALL STEEL Bodies

represent the last word in the art of truck body building. They stand for security, strength, safety and sanitation. Made entirely of steel, they insure your truck a body that is practically indestructible—a body that will stand up under the most severe wear and tear—giving the maximum service—needing the minimum repair. They cannot split or warp. They will not rot and crack. They eliminate fire risk completely and by reason of their light weight are relatively easy on tires.

Whether you manufacture commercial vehicles or simply contemplate purchasing a truck, it will pay you to investigate the Budd All Steel Body today. Let us furnish you estimates and full information.

EDWARD G. BUDD MANUFACTURING CO.
Ontario and I Streets :: Philadelphia, Pa.
Detroit Office and Showroom, 736 Woodward Avenue

**PRESSED STEEL
FRAMES
FOR TRUCKS**

Handsome, Light, and
more enduring than those
made of rolled channel

**A. O. SMITH COMPANY
MILWAUKEE**

**REMY MAGNETOS
400 SOLD DAILY**

This is not the record of a single day. This is a daily average—for four months ending with January—of cars newly equipped with Remy magnetos. These figures have never been approached by any other manufacturer.

**Inductor type—Simplest, Strongest.
Built for 24-hour a Day Service.**

REMY ELECTRIC COMPANY
World's Largest Ignition Factory
Anderson, Indiana

**"Reliable Springs are
More important on
Commercial Cars than
on Pleasure Cars."**



THE PERFECTION SPRING CO.

Cleveland - - - - - Ohio

ROSS STEERING and DIFFERENTIAL GEARS

**are standard on good
motor truck
construction**

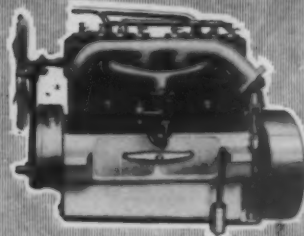
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ROSS GEAR & TOOL CO.
790 Heath St. :: Lafayette, Ind.

YOU wouldn't expect a race horse to do draft horse work. Then why expect satisfactory Truck service with a pleasure car motor?

Truck work requires a motor with a capacity for continuous hard work. That is efficiency—and is exactly what you get in the Waukesha Long Stroke Truck Motor. It's a "make good" motor that gives the truck manufacturer full confidence that his truck will do all he claims. Strength—long wear—economy of fuel—the ability to work under all conditions—these are what you get in every

WAUKESHA 4½x6½" LONG STROKE TRUCK MOTOR



Waukesha Motor. The crankshaft has a tensile strength of 70 tons. The bearings have three times the wearing quality of ordinary bearings. Let us prove the Waukesha Motor's supremacy. Ask us in the next outgoing mail. **WAUKESHA MOTOR CO. Dept. A. WAUKESHA, WIS.**



TRANSMISSIONS

Made by Specialists

COVERT TRANSMISSIONS GIVE perfect service, because they are designed and built by men thoroughly acquainted with every requirement that is made by a motor car transmission.

For Commercial Vehicles of from 500 to 10,000 lbs. capacity.

For Pleasure Cars of from 20 to 60 H. P.

Covert Motor Vehicle Co.

Sales Office—
Detroit, Mich.

Factory—
Lockport, N. Y.





Swinehart Cellular Truck Tires

Most resilient solid tire made. Absolutely non-skid. Increases traction and eliminates undesirable slipping and friction. Does away with the use of chains. The holes in the tire act as a radiator, preventing excessive heating and internal friction.

The extra large surface of the Swinehart tread reduces the pressure per square inch to a point well within the safe and economical limit.

The wonderful elasticity, due to the combined use of our cellular design and the highest grade of rubber, allowing the tire to "give and take," to stand the road shocks without damage, is the true secret of Swinehart longevity. Demountable Quick Attachable.

We also make a full line of smooth tread and block tires, single and dual.

Will exhibit at Boston Show, March 19th to 25th.

THE SWINEHART TIRE & RUBBER CO.
AKRON, OHIO
Boston Branch, 727 Boylston Street

The BROWN Commercial Car

1900 lbs. Capacity—Powerful as a
1½ Ton Truck

Internal Gear Drive

¶ Every business man has dreamed of an efficient delivery service maintained by powerful and reliable trucks, but the enormous upkeep expense of larger trucks has obstructed the realization of his dream.

¶ THE BROWN COMMERCIAL CAR is on the market to meet the demands of the merchant who wants rapid, reliable, uninterrupted and economical service.

Write for specifications and complete description

The Brown Commercial Car Co.
PERU, IND.

A Motor Truck Investment

There is a motor truck factory in operation in the East with a complete line of the latest and most up-to-date tools in a fine plant, that is about ready to undergo a transformation owing to the dissension of the stockholders. This is a going concern with many agencies established and trucks operating in most states.

The truck has been well advertised, is favorably known and has made good.

There is nothing wrong about the concern except the stockholders are not compatible. The company does not owe a dollar.

I have the future disposition of this plant in my hands, and I know the truck business from buying raw material to selling its finished product. The entire assets can be had for fifty cents on the dollar (actual inventory is about \$175,000.00) and there are no liabilities. I want the right man or men to couple up with me and take over the business. It has a tremendous future. Full particulars to legitimate inquirers.

Address

"H. H. H."—Care of Commercial Car Journal

Flint Motor Wagon Department

Durant-Dort Carriage Company

Flint, Michigan

makes

Motor Delivery Wagons

Loading Capacity

BEST

FLINT

1000 to 1250 lbs.

1600 to 2000 lbs.

PRICE—Chassis Only

\$750 to \$800

\$1375 to \$1460

Complete With Body

\$800 to \$925

\$1450 to \$1635

Hurry! Hurry! If You Want the Agency

WRITE NOW for CATALOG and
FULL INFORMATION



ANNULAR BALL BEARINGS
The Dependable Kind

F & S

MADE IN GERMANY

J. J. BRETZ COMPANY
Sole Importers

MOTOR HALL, 250 West 54th St., NEW YORK



PLAIN COMPRESSION
(Patented)

Empress

BRASS AND STEEL
GREASE
AND
OIL CUPS

WE MANUFACTURE

a full line of Plain, Leather Packed, Ratchet, Marine, Spring Compression, and many other styles of Grease Cups.

Our line of Oil Cups is equally satisfactory and complete.

Catalogue on Application

Bowen Manufacturing Co.
AUBURN, N. Y.



WIRE LOCK
(Patented)

TRADE MARK
Raybestos
REG. U.S. PAT. OFF.

"THE ORIGINAL AND BEST ASBESTOS BRAKE LINING"

Makes Your Car Safe!

YOU are always sure that your brakes will grip and hold if they are lined with RAYBESTOS. It is constructed of the best long fibre asbestos interwoven with copper wire. It is oil, water, heat and practically wear-proof, so you know it is always ready and will always work in an emergency.

THE ROYAL EQUIPMENT CO.

484 Housatonic Avenue
Bridgeport, Conn.

We also make Duplex and Raymond Brakes and Gyrex, the Mixer



Twenty-two Satisfied Customers Wrote Us in One Week

Just think of it! Twenty-two letters received from satisfied users of Avery Trucks in one week. All red-hot testimonials telling of the wonderful work their Avery Trucks are doing for them.

Here are a few extracts from some of the letters:

"The cost of maintenance of our truck has been figured at \$39.00 per month average for 16 months including everything, oil, tires, repairs and all accessories. Jewell Stoneware Co., Omaha, Nebr."

"Saving for 5 months over horse delivery, \$300.00. Glencoe Brewing Co., Glencoe, Minn."

"The expense for upkeep in the way of repairs parts has been practically nothing, and we find this truck is very economical in the consumption of gasoline and lubricating oil. Dyess Fruit and Produce Co., Minneapolis, Minn."


And 19 More, Some Better Than These

Is it any wonder that Avery Truck sales are climbing and dealers are scrambling for territory, when we get letters like these?

We now have a complete line of trucks ranging from a one to five-ton size.

If you haven't seen our new catalog you had better get one and find out about the Avery before you buy. Address

THE AVERY COMPANY
950 Iowa Street, Peoria, Ill.




BUCKEYE Motor Truck Jacks

Buckeye Motor Truck Jacks are safe, reliable and made to stand the wear and tear for which they are intended. They are fully guaranteed, and cannot possibly drop with a load. They are made from Steel Drop Forgings, best finish and workmanship throughout.

Get our prices before you place your orders for jacks, we can save you money.

No.	Height Bar Down	Raise of Bar	Height Bar Up	Weight	Capacity	List Price
7	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	18"	16 lbs.	2 $\frac{1}{2}$ tons	\$10.00
13	14 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "	20 $\frac{1}{2}$ "	20 $\frac{1}{2}$ "	3 "	15.00
14	14 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "	20 $\frac{1}{2}$ "	23 "	5 "	16.00
9	11 $\frac{1}{2}$ "	6"	17 $\frac{1}{2}$ "	10 "	1 $\frac{1}{2}$ "	6.00

Write today for descriptive catalog. Made only by
THE BUCKEYE JACK MFG. CO., Alliance, Ohio



FEDDERS

Real Square Tube Radiators

Commercial cars require radiators that will stand many shocks and much hard usage. This was one of the weak parts of the commercial car but the test of time has proved that FEDDERS radiators render efficient service.



We want to figure with you your requirements for the coming season. If you haven't used Fedders radiators you probably have had a great deal of radiator trouble and you may think that there isn't a radiator built that will give you satisfaction. If this is the case we would like to have an opportunity of demonstrating that the Fedders radiator will stand the wear and tear and shocks of the commercial car and that manufacturers who equip their commercial cars with the Fedders have practically no radiator trouble. We can convince you. Will you give us the opportunity?

FEDDERS MFG. WORKS
 BUFFALO :: NEW YORK

Universal Spicer Joints

For Commercial and Pleasure Motor Cars



Consult our representatives:

K. Franklin Peterson, 122 S. Michigan Blvd., Chicago
 Thomas J. Wetzel, 17 West 42nd Street, New York
 L. D. Bolton, 1810 Ford Building, Detroit

Foreign Representative: **BENJAMIN WHITTAKER, 21 State St., New York**

SPICER MFG. CO. PLAINFIELD, N. J.

BOLLEE LAUTH-JUERGENS RANDOLPH SEAGRAVE KISSEL GRAND RAPIDS SCHNEIDER KINNEAR PEERLESS RENAULT

BALL BEARINGS

"INSURANCE FOR BUILDER AND USER"

RHINELAND MACHINE WORKS CO

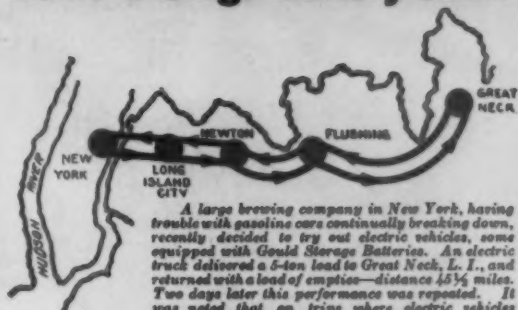
140 WEST 42ND ST. NEW YORK, N.Y.

GEBRUDER STOEWER, ARIES, KELLY, NAGANT, PANHARD, PELUGET, DELAHAYE, MACK, DEUTRICH, AUTO-METALLURGIQUE

ADLERWERKE

HISPANO-SUIZA

This is a Typical Gould Storage Battery Stunt



A large brewing company in New York, having trouble with gasoline cars continually breaking down, recently decided to try out electric vehicles, some equipped with Gould Storage Batteries. An electric truck delivered a 5-ton load to Great Neck, L. I., and returned with a load of empties—distance 45½ miles. Two days later this performance was repeated. It was noted that on trips where electric vehicles equipped with other batteries were used, those with Gould Batteries came back two hours ahead of the others.

Customers who are experienced in battery service invariably come back to us voluntarily when they have tried out one Gould Battery, for they want more of the same kind of service.

WRITE FOR LITERATURE TODAY

Gould Storage Battery Co.

General Offices: 341 Fifth Ave., New York

WORKS: Depew, N. Y.

Agents in all large cities

Full stock carried in all cities where we have offices or agents.



Coventry Noiseless Chains as Used
on "Benz" Engines

COVENTRY NOISELESS CHAINS

Have been the standard of Europe for many years. These chains run with remarkable accuracy and precision, their construction and design make them positive and flexible.

Standard equipment on the following cars: Daimler, Deacy, Humber, Maudslayi, Benz, Arrol-Johnson, Vauxhall, etc. Write for full description and details.

UNITED STATES REPRESENTATIVES:

Sarco Engineering Co., 110 Broad St., N. Y.

*Built on Steel
Wear Like Steel*

Goodrich Wireless Demountable Truck Tires

Get the proved and
the original American
Steel Base Tire . . .

The
B. F. Goodrich Company
Akron, O.

Stewart Delivery Trucks

Built for Real Service and Wear

Stewart light delivery trucks are strong and rugged, economical and profitable to use. They are the "best sellers" of the year for dealers and the "best buy" on the market for merchants.

The biggest dealers in the country are selling Stewart light delivery trucks. They recognized the Stewart as the first really carefully designed and well-built light truck on the market and are doing a large and constantly increasing business, because the Stewart fits nearly every line of business and the field is unlimited.

The Stewart has been designed and built with the finest skill and most expert workmanship it is possible to procure. Up-to-date features of great value make this truck a "hit", wherever seen or used. Read them:

30 h. p. 4 cylinder Continental motor, 31½" x 31½".
Bosch magnets, single ignition.
Brown-Lipe Selective Transmission, 3 speeds forward, 1 reverse.
Timken Axles, front and rear.
Demountable rims, 35 x 4½" tires, front and rear.
Genuine honeycomb radiator, slapping hood.
Left-hand steering, center control.
7-foot loading space. Wheelbase 126".
Chassis price \$1650. Bodies to suit all businesses.

Write for catalog and dealers' proposition

Stewart Motor Corporation, Buffalo, N. Y.

\$1650
[Chassis]



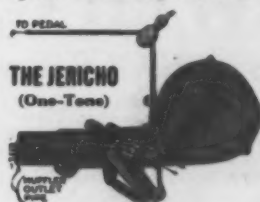
Stewart Panel Body
Capacity, 1000 Pounds

The slippery, skidding pavements and slushy suburban roads of Spring are particularly troublesome to heavy commercial cars. Obsolete half the worry by equipping your car with

JERICH0 THE PERFECT MOTOR CAR SIGNAL

The horn whose clear, distinct note commands attention among the greatest confusion of noises, and never startles the pedestrian.

The horn which cannot clog. The horn—being exhaust-operated—entirely free from maintenance cost.



Equip your car with Jericho now and save accident bills, loss of time, and worry during the skidding season.

PRICES, \$7 to \$10, according to size.

The Randall-Faichney Co. Jamaica Plain Boston, Mass.
Also makers of Jubilee Horn, B-Line Gears, MacKae Blitz Spark Plugs, Jericho Gas Regulators and other automobile accessories.

SAGER Shock Absorbers

Absolute Necessity for Commercial Cars
SUCCEED WHERE OTHERS FAIL



Endorsed by:

SAURER
FRANKLIN
ATTERBURY
KISSEL KAR
STEWART
OLDSMOBILE
ELMORE
CRAWFORD
LOGAN
DORRIS
RAMBLER
MAXWELL
STODDARD-DAYTON
POPE-HARTFORD
AUTOCAR
COLUMBIA

Try a set at our expense

We also make bumpers to protect radiator and other vital parts at front of truck.

J. H. SAGER COMPANY
293 South Ave. . . . Rochester, N. Y.

NON-GRAN

For Worm Gears

The same structural density and cohesive toughness which give NON-GRAN its non-granulating quality and which made it the best bearing bronze for motor cars, etc., make it the best metal for worm gears in motor trucks.

The wonderful tenacity of the fibres of NON-GRAN, which enables it to resist successfully the frictional pull on the surface of motor bearings, enables it to likewise resist successfully the frictional pull or push on the surfaces in worm gears.

NON-GRAN has an average tensile strength of 41,725 lbs. per square inch, and the elastic limit averaging over 23,000 lbs.

AMERICAN BRONZE COMPANY
1868-1884 Chester Avenue :: Berwyn, Pennsylvania

A Word to Thinking Dealers

In building a lasting business,—one which will endure indefinitely, your local business reputation must be backed up with dependable goods. Your success depends largely upon the product you sell.

You cannot afford to sell your merchants a motor truck which does not possess lasting qualities.

The **DURABLE DAYTON** line of motor trucks (2, 3, and 5-ton models) rank exceptionally high in the industry. There are several makes of high-grade trucks on the market today—the **Durable Dayton** is one of the several.

We seek business connections with that class of dealer who has the honest desire to build his business, similar to that of this company,—a business of stability, reliability and conscientious dealing.

We are continually creating business for Durable Dayton Dealers with our national advertising campaign, sales co-operation and personal work in the field.

We are best known by the expressed satisfaction of Durable Dayton users throughout the country.

Write promptly for detailed information and complete catalog

The Dayton Auto Truck Co.
DAYTON, OHIO

KOEHLER COMMERCIAL CAR

CARRYING CAPACITY 1600^{LBS} PRICE \$750.

The Maximum Car at Minimum Price



Open Flare-Board Type

Large and roomy. Inside measurements, 44 inches wide, 64 inches back of driver's seat to rear. Flare-boards, 17 inches above floor. Strongly ironed throughout, also ironed to receive four-post canvas top, which can be had from stock at \$40 additional. Capacity, 1600 lbs. Price, \$750. Prices of various types of bodies range from \$40 to \$150 extra.

All styles of bodies are obtainable. KOEHLER is built in Newark, N. J. and is backed by an organization of integrity and capital.

ADDRESS ALL CORRESPONDENCE TO

H. J. KOEHLER S. G. CO.

1709 Broadway, New York, N. Y.



What is it Costing?

The growing merchant must know his costs; for cost knowledge is the basis of business.

THE JONES RECORDER

is the basis of cost data for motor trucks. Every movement of the truck is shown in graphic form. Speeds, distances and delays are recorded by lines on the chart.

The Jones Recorder permits you to establish cost units for your delivery service—to know your costs per 100 lb. mile, or in any other unit most efficient for your business.

We are always glad to supply more information and aid.

THE JONES SPEEDOMETER

Broadway at 76th St., New York, N. Y.

PLANTS: Bush Terminal, Brooklyn, N. Y. New Rochelle, N. Y.

SPLITDORF

"Always There"

SPLITDORF IGNITION is the MOST ECONOMICAL because it is the MOST RELIABLE.

SPLITDORF IGNITION is the MOST EFFICIENT because it ALWAYS DELIVERS THE GOODS.

SPLITDORF IGNITION is the MOST PRACTICABLE because you are always able to throttle down to a snail's pace with the positive certainty of starting on a quarter turn under all conditions—if you have SPLITDORF EQUIPMENT.

The SPLITDORFLITE electric lighting generator is the smallest, most compact and only self-contained generator on the market. It affords a positive source of illumination, spotlessly clean, unaffected by weather conditions, and, once properly installed, ends an owner's lighting troubles for all time.

Write for "New Lights for Old."

SPLITDORF ELECTRICAL CO.

98 Warren Street, Newark, N. J.

BRANCHES:

New York
Boston
Philadelphia
London

Chicago
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San Francisco
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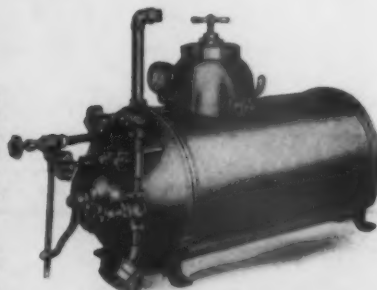
3-Gallon Approved Extinguisher

Chemical Fire Apparatus

HAND EXTINGUISHERS and TANKS

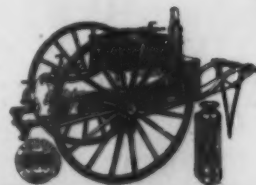
of every description for department apparatus. We are equipped to make tanks of any size or type.

We also provide a complete line of Chemical Engines, mounted on wheels for service in factories, towns, villages, etc. Hose Reels, Hose Axles, Ladders, Hooks, etc.



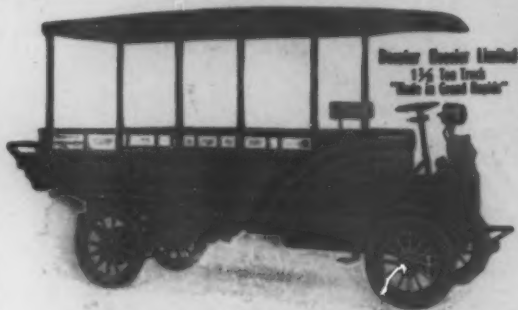
35-Gallon Copper Tank

We can equip any chassis complete with body, chemical apparatus, etc. Ask us.



O. J. CHILDS CO.

48 Liberty Street
UTICA, N. Y.



Decatur 1 1/2 Ton Truck

The Truck with a reputation for
Economy Efficiency Durability
and *Low Operating Cost*

Our Trucks are used in 61 different lines of business.
Write for catalog and complete specifications telling
WHY DECATUR TRUCKS ARE BEST.

GRAND RAPIDS MOTOR TRUCK CO., GRAND RAPIDS, MICHIGAN



Complete as shown - **\$1750.00**

We also manufacture a 1 1/4 ton truck

A "SANDUSKY" truck means Service, and Service is what brings repeat orders. We make the complete truck in our own factory and know that the material is the best and the workmanship cannot be excelled. No guesswork with us, nor do we have to depend on others for our parts. This is of great importance.

The special features incorporated in our trucks put us in position to give more value for the money than is possible to get in others.

Write for proposition. We will explain.

"Sandusky" Model "B" 1500 lb. Delivery Truck

Sandusky Auto Parts & Motor Truck Co.
Sandusky, Ohio, U. S. A.

THE W. F. STEWART CO.

ESTABLISHED 1881 INCORPORATED 1898

FLINT, MICHIGAN

WE BUILD BODIES

for both pleasure and commercial vehicles, and can give you goods and service that can be depended on. The price, too, will be right. Get in touch with us.

THE KINSEY MANUFACTURING CO.

TOLEDO, OHIO

Manufacturers of Auto Parts—

Kinwood Radiators, Fenders

Kinwood Oilers, Gaskets

Kinwood Steel Frames, etc., etc.

SPECIAL METAL STAMPINGS

When Writing, Please Say—"Saw Your Ad. in the C C J"



"One of the greatest mechanical geniuses of all times"—a world-famed maker of a high-priced car so refers to Henry Ford—whose great accomplishment is the Ford car. You'll want the mechanically perfect Ford this season—and to avoid disappointment you should get it now.

"Everybody is driving a Ford"—more than 200,000 in service. New prices—runabout \$525—touring car \$600—town car \$800—with all equipment, f. o. b. Detroit. Get particulars from Ford Motor Company, Detroit, Mich.

Profit by our experience

The ever improving quality of your own products emphasizes the value of experience in the production of materials of any nature.

Experience and knowledge, combined with progressiveness, guarantee quality and improvement that no other factors can produce.

This is what we offer you in our Chrome Vanadium Steel—equal knowledge and progressiveness with longer experience.

Our Chrome Vanadium Steel is made under our own secret process, patents for which are now pending.

Drop us a line today.

The United Steel Company

Branches:
New York
Chicago
Detroit
Cincinnati

Canton,
Ohio



Detroit Oilers have no ball checks

There are no check valves or other complicated parts in Detroit Mechanical Force Feed Oilers to give trouble and cause failures. Every drop of oil must go to the place where it is needed.

A separate pump for each feed measures the oil and insures a rate of feed that is exactly right at all times. Once properly regulated there is no chance for faulty lubrication and dry bearings, carbonized cylinders, smoke at the exhaust and wasted oil are entirely eliminated.

Detroit Oilers are made with from one to thirty feeds in capacities of two pints to five gallons—pully, sprayer, ratchet or gear drive.

Made also with two compartments for feeding one kind of oil to cylinders and another to the bearings.

Write today for catalog P-67 and full information.

DETROIT LUBRICATOR COMPANY.

DETROIT, U. S. A.

Largest Manufacturers of Lubricating Devices in the World.



One-Shell Type Without Band

Seamless Steel Tanks

for GASOLINE and AIR UNDER PRESSURE in connection with Air Starter Equipments and Forced Gasoline Feed on Pleasure and Commercial Cars

All Sizes and Styles
(in cylindrical shapes)

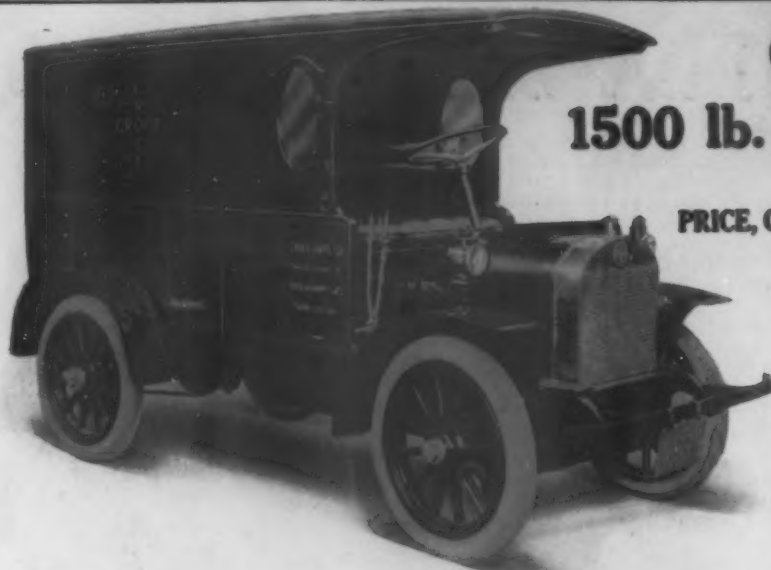
Light in weight, attractive in appearance, safer than welded or riveted containers of twice their weight. Send us your specifications.

We Are Manufacturers, Not Jobbers

Federal Pressed Steel Co.
MILWAUKEE, WIS.



Two-Shell Banded Type



CROCE

1500 lb. Delivery Wagon (Closed Body)

PRICE, CHASSIS, \$1,750. COMPLETE, \$1,850

Croce Commercial Cars are in a class by themselves, just the car the business men have been looking for so long. The best materials that money can buy are none too good for Croce Cars.

THE CAR THAT IS BUILT TO LAST TEN YEARS. Built fool-proof. Anyone can handle it without injuring the car.

There are some men who figure economy in the buying of a car by the lower price; the wise men figure on the life of the car.

There are many cars built for one year's service, two years the limited life. Those cars sell for about half the price of the Croce Car, which is built to last ten years and will outwear five other makes of cheap cars with less trouble and expense. Where does the economy come in?

SPECIFICATIONS OF CROCE 1500 lb. DELIVERY CAR.—

Motor, 4 Cylinder, 4-cycle block, with 3 main large bearings (crank shaft 14). Bore 2 3/4, stroke 5 inches, L-head. Magneto, Bosch High tension. Carburetor, Schoeller Model L. Clutch, Cone, ground steel with roller control; no wearing parts except when changed speed; Croce Patent. Joints, splines universal, on clutch and rear. Transmission, 3-speed and reverse, sliding gear type, with Timken roller bearings. Rear axle full floating type, the largest Timken make, with Timken roller bearings. Tires, 24-44 front and rear (pneumatic). Front axle, Timken front with Timken roller bearing on wheel and head. Radiator, tubular type, Kells make, with Croce patent noted bottom; guaranteed never to leak or get out of order (barring accident). Steering Gear, screw and nut type, every wearing part automatically taken up, with no back lash.

Springs, Croce design, for easy riding with and without load; special chrome vanadium spring steel of the highest grade.

Croce Commercial cars are not built of cheap materials to meet others in price, but are built on sound business principles for the business man who wants a car to last 10 years, and for the man who knows a good car when he sees it.

The first Croce car was built in 1905; all our product was sold, and built up a reputation locally in New Jersey, until this year, when a large plant is under way with 40,000 square feet of floor space.

Good territory is now open for the sale of Croce trucks of from 1500 lbs. to 5 tons capacity. Send for Catalogue and full information.

CROCE AUTO CO., ASBURY PARK, N. J.

DOLLARS IN YOUR POCKET

INSTEAD OF DRILLS IN THE SCRAP HEAP



Nearly all drills ground by hand are ground inaccurately, last about half as long and do about half as much work as they would if ground correctly.

Because the angle on which the lips are ground is usually wrong, they are not ground on the same angle or are ground off center or sometimes both ways.

Either way makes one lip do most of the cutting; also the clearance is either too much or too little. If too much, the thin cutting edge produced will not stand up, or if too little the drill will rub, and cut very poorly. A drill ground any of the above ways requires frequent regrinding and is a slow producer.

THE AMERICAN DRILL GRINDER

operated by a boy will correct all the errors so common in hand grinding; make your drills cut faster and last longer—a double gain to you.

THE HEALD MACHINE COMPANY

16 New Bond Street

WORCESTER, MASS.

When Writing, Please Say—"Saw Your Ad. in the C C J"



IT HAS BEEN TRULY SAID

"If you want your trucks to give efficient service all the year round, regardless of the condition of the roads, look to their traction. If you are not watching your traction, you are not getting the best results from your truck."

Efficient traction means increased mileage—and a dependable delivery schedule at the lowest possible cost.

To provide your truck with the equipment NECESSARY to maintain or increase its efficiency is merely a matter of good business on your part—it pays in dollars and cents. Of the operating equipment NO part is more necessary than a set of traction grips—NO part will SAVE you more money by its possession—NO part will COST you more money by lack of it.

Under certain conditions of the road YOUR car will require grips to provide efficient traction—with grips as a part of the car's equipment, your service is GUARANTEED.

Federal grips are designed and made especially for solid tires, and built for continuous hard service. Federal grips are time-savers, being quick-detachable in every sense of the word. Jack or special tools not required in application of grips—your hands and two minutes are needed—that's all. Federal grips fold up in a very compact form when not in use—they can be conveniently carried on the car, ready for any emergency.

Federal grips are made from NICKEL STEEL exclusively, the steel being heat-treated in the most approved manner, making it capable of withstanding more than the ordinary amount of accidental or customary hard usage.

Federal grips will do the work—not injure the tires—and are mechanically perfect—our guarantee that goes with every set covers that.

"Points about Traction Grips and their selection" are covered in our catalog—YOUR copy is ready—it's free.



Exhibiting at BOSTON
COMMERCIAL CAR
SHOW, SPACE 501

FEDERAL CHAIN & MFG. CO.
SPRINGFIELD MASSACHUSETTS

Truck Economy is Dependent

Upon Knowledge of Truck Mileage

Veeder

Hub Odometer

\$25

At Your Dealer's or
Direct from Factory



You, as a commercial car user, must look upon the money paid for trucks as just as much of an investment as money paid out for supplies, additions, stocks, etc., and you should insist on a proper return from this investment as well as upon the others.

To make your truck investment pay it is *absolutely essential* that accurate records be kept of the distance the truck travels. By such records, and only by these records, can you check your tire guarantee, your drivers' capabilities, gasoline and oil consumption per mile, cost per ton for each mile, etc., etc.

The VEEDER HUB ODOMETER will do this necessary work for you. It registers backwards as well as forward. It is sealed, so cannot be tampered with or altered. It simply takes the place of the regular hub cap and *can be attached by any mechanic.*

**No Intricate Wiring, No Cables
No Magnets, No Tubes**

All we need to know is make, model, size of wheel and year of manufacture of your truck. We ship the HUB ODOMETER to you and you do the rest. Being made by the Veeder Manufacturing Company, whose recording instruments are world-famous in all lines of business, is a sufficient guarantee that the VEEDER HUB ODOMETER is simple, accurate and durable.

Send for Catalogue D, descriptive of HUB ODOMETER.

The Veeder Manufacturing Co., Hartford, Conn.

Makers of Cyclometers, Odometers, Tachometers, Tachodometers, Counters and Small Die Castings.

When Writing, Please Say—"Saw Your Ad. in the C C J"



CULLMAN SPROCKETS and Differentials

in stock and to
order.

Send for catalog
and let us quote
you on your re-
quirements.



CULLMAN WHEEL COMPANY, CHICAGO
1351 GREENWOOD TERRACE

STANDARD Adjustable Taper Roller Bearings



A superior grade Taper Roller Bearing for Commercial Truck service. The Cups and Cones of these Bearings are made from Becker steel tubing, subjected to a properly controlled heat treatment, which makes the steel homogeneous throughout the section.

There will be no flaking of the surface of the Cups and Cones as occurs with similar parts made from case-hardened carbon steel.

Made interchangeable with other Taper Roller Bearings, Double Row Ball Bearings and Annular Ball Bearings. The highest grade motor trucks are using these Bearings on account of the superior quality of the steel used in their construction.

STANDARD ROLLER BEARING COMPANY, Philadelphia, Penna.

When Writing, Please Say—"Saw Your Ad. in the C C J"



\$850.00 Either Pneumatic or Solid Tires
This is but one of our Models

Do You Realize

that the **Parcel Post** will
create an enormous de-
mand for

Light Delivery Trucks?

Are you ready, Mr.
Dealer?

Have you the line for
this demand?

THE COMMERCE CAR is the logical motor wagon
for the Parcel Post Delivery. We are ready to meet your requirements.

Wire or write now for an agency proposition. We have some open territory.

THE COMMERCE MOTOR CAR COMPANY

General Offices: 633-639 Penobscot Building

DETROIT, MICHIGAN

GASOLINE AND OIL TANKS

SEAMLESS
TANKS



Compartment Tanks--
Gasoline Contents
Indicators

All Sizes—All Models
Big Ones and Little Ones

Under-Hung Pressure
Feed

Complete with Fittings, Etc.

WE ARE MANUFACTURERS—
NOT JOBBERS



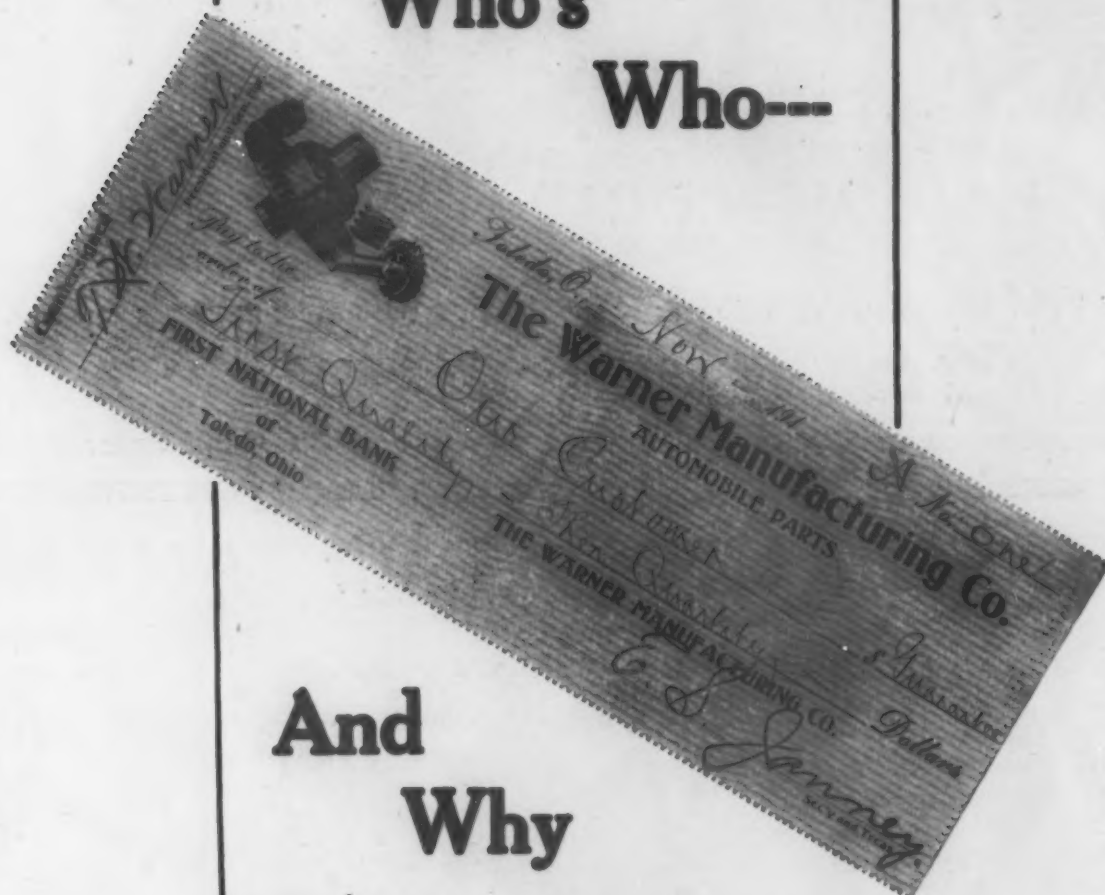
LEAKLESS
TANKS

JANNEY, STEINMETZ & CO.

PHILADELPHIA AND
NEW YORK

WARNER

Who's
Who---



And
Why

The Warner Manufacturing Company
Toledo, Ohio

T. W. WARNER, President-General Manager

TOLEDO

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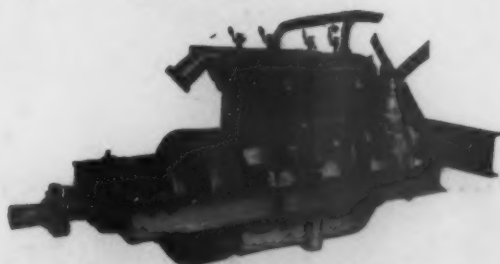
FLARE BOARD AND STAKE BODY. WHOLESALE HARDWARE

KING

3 1/2 TON TRUCK

NOTE THESE FEATURES:

- | | |
|-------------------------------------|--|
| ☐ Spring Suspended Radiator | — No leaks from vibration. |
| ☐ Governor Controlled Motor | — Speed limited to 12 miles per hour. |
| ☐ Three Point Suspension | — No strained or broken shafts. |
| ☐ Multiple Disc Clutch | — Smooth starting. |
| ☐ Transmission Gears always in Mesh | — Impossible to strip gear teeth. |
| ☐ Short Wheel Base | — Can turn in a 40 foot street. |
| ☐ Oversize Tires | — Low tire cost per mile. |
| ☐ Liberal Equipment | — Lamps, tools, jack, Klaxonet and Warner. |



REMOVABLE POWER PLANT

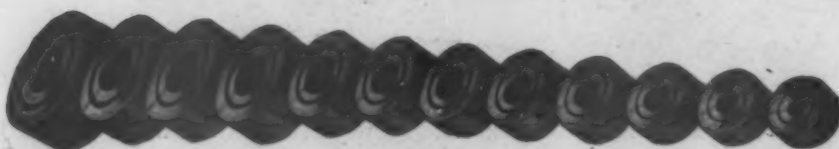
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**A. R. KING MFG. CO.
KINGSTON, N. Y.**

**RESPONSIBLE AGENTS WANTED FOR
GOOD TERRITORY**

New Departure Ball Bearings

American Made for American Trade



Gasoline is going up

and the users of motor vehicles are paying the bills. Abroad, where gasoline costs half-a-dollar a gallon, builders of automobiles *use only ball bearings.*

Why?

Because ball bearings are more thoroughly anti-friction than any other type. Friction scarcely exists at all in ball bearings,—hence, less power and less fuel are required to drive mechanism mounted on such bearings.

Other advantages are:

- Minimum wear;
- Maximum efficiency, endurance and dependability;
- Ease of replacement;
- Freedom from necessity of frequent adjustment;—ball bearings are fool-proof.

The American-made New Departure ball bearings have no superior—are strongly guaranteed and preferred by the majority of American automobile manufacturers.

One such manufacturer says: "More real bearing value than I can get out of any other bearing."

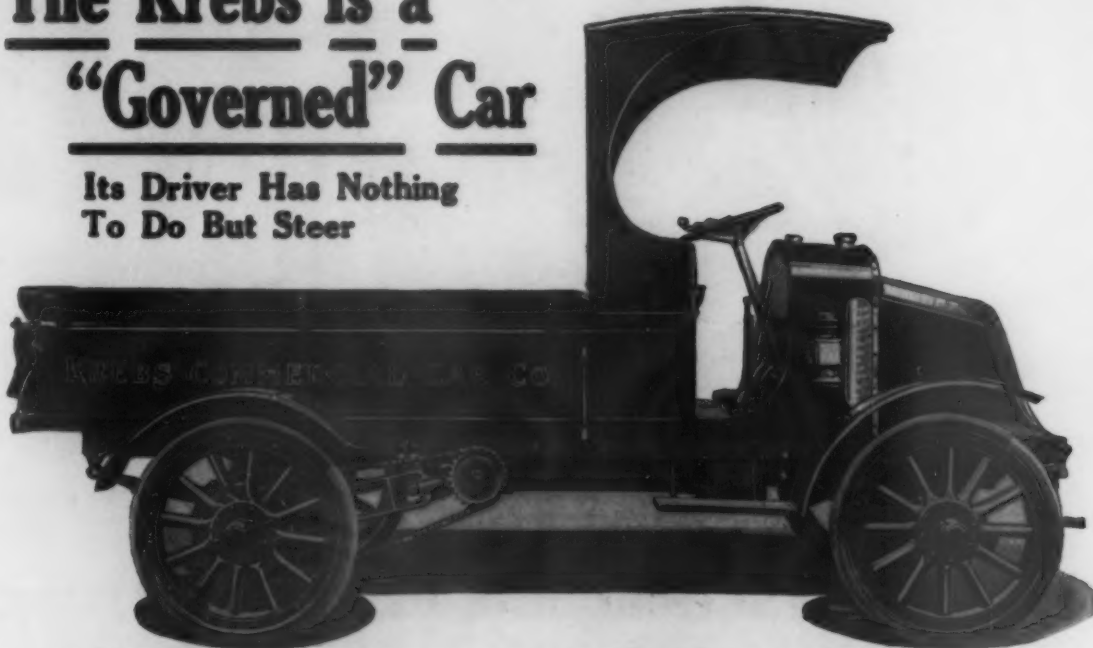
THE NEW DEPARTURE MANUFACTURING CO.
BRISTOL, CONNECTICUT

WESTERN BRANCH:

1016-1017 Ford Building, Detroit

The Krebs Is a "Governed" Car

**Its Driver Has Nothing
To Do But Steer**



Krebs Commercial Car Model A. Guaranteed Capacity, 1 ton. Price \$1,510 with Standard Open Express Body and Cab Seat. Price for Chassis only, \$1,375

Rightly termed, "The Car That Thinks", the Krebs, by means of its wonderful governor, automatically maintains the precise rate of speed that its owner desires.

A careless driver cannot mishandle the Krebs, while a careful driver finds that its governor allows him to give undivided attention to road and traffic conditions.

This is more than assurance to the car owner that his truck investment will not be abused. It is an assurance of fuel economy and minimum cost of maintenance.

With the Krebs governor placed to give a certain rate of speed, the motor is accelerated or retarded with a greater degree of nicety than human skill can attain.

It is literally true that the action of the Krebs governor is quicker than thought; its control of gas is accurate and absolute. The exact amount needed for the required speed is supplied; never more and never less.

The Krebs is made in three models. Model A, shown above, has a chain-driven chassis and solid tires. Speed up to 15 miles per hour.

Model B is fitted with shaft-driven chassis and pneumatic tires. Guaranteed capacity $\frac{3}{4}$ ton. Speed up to 20 miles per hour. Price with standard delivery body, screened, \$1,550.

Models A and B have our own valveless two-cylinder motors. Either will be furnished with a high-grade four-cylinder four-cycle motor if desired, for \$50 extra.

Model D, chain driven, with guaranteed capacity $1\frac{1}{2}$ tons, has a four-cylinder 30 H. P. Rutenber motor, cylinders $3\frac{3}{4}$ by $5\frac{1}{4}$. Price of chassis alone, \$1,775. May be fitted with starting and electric lighting system at nominal extra cost.

We build the Krebs with special bodies for any trade or industry. Write for more complete information today, and tell us your needs

Desirable territory for dealers who know how to handle a good thing

THE KREBS COMMERCIAL CAR CO., Clyde, Ohio, U.S.A.



The First Practical Small Delivery Truck

The Willys 3/4 Ton Utility Truck---\$1250
(Class Only)

WHAT we wish to particularly impress upon you is that this truck is *not* a redesigned pleasure car chassis. It is a thorough truck from start to finish, built to do that hard work required of a commercial car.

Building these trucks in great quantities makes it possible for us to market for \$1250 what others must get \$1500 to \$1600 for.

Full particulars from our nearest dealer or the factory.

Please address Dept. 12.

**The Gramm Motor Truck Company
Lima, Ohio**

J. N. WILLYS, President

BRIEF SPECIFICATIONS

CARRYING CAPACITY—1500 lbs. Maximum, 2000 lbs.
BODY—Optional and extra.
FRONT AXLE—I-Beam Section. Timken bearings.
REAR AXLE—Rectangular Section, Timken bearings in hubs.

MOTOR—4-cylinders, 4 in. bore—4 3/4 in. stroke. Provided with enclosed and sealed governor.

TRANSMISSION—Selective type, three speeds forward and one reverse.

WIDTH OF FRAME—34 inches.

WHEEL BASE—120 inches.

TIRES—Front, 36 x 3; Rear 36 x 3 1/2. Goodyear Solid.

LOADING SPACE—Approximately, 48 inches x 96 inches

GASOLINE CAPACITY—20 Gallons.

EQUIPMENT—Two-side oil lamps. Oil tail lamp, horn, and full set of tools.

7 Big 14-Year Tires for Trucks

Truck owners on all sides admit the saving of Goodyear Truck Tires. These tires to equip 65% of all American-Made Trucks in 1913 according to the present rate of increase. A Tire for every service—seven tires in all. 14 years of tire building experience back of each tire!

We do not know which of these tires is best adapted to your needs. But we do know that **one** type, and perhaps several will mean a saving of money all along the line. For these are the tires that cut tire cost in two and increase the **efficiency** of trucks by **prolonging** it. Goodyear Truck Tires save the motor!

The Utmost
of
Speed,
Resiliency

GOODYEAR
AKRON, OHIO
Truck Tires

The Utmost
of
Durability,
Economy

Which of these Tires for You?

Goodyear Demountable Cushion Truck Tires

This is the durable Cushion Truck Tire so famous for its resiliency.

It's the tire made with undercut sides, the slantwise bridges and notched dual treads—patented features that result in a resiliency equaled only by pneumatic tires. In fact hundreds of users have claimed these tires to be fully as resilient as the pneumatic which has been properly inflated.

This tire which carries a 10,000 mile guarantee is supreme for light, high-speed trucks. It is demountable. And its notched dual tread makes it as non-skid as it is possible to build cushion tires.

Goodyear Solid Demountable 10,000 Mile Truck Tire

The tire for heavy-duty, slow moving trucks—a tire that can be "put on or taken off easily"—a tire likewise with a 10,000 mile guarantee.

These tires abolish the need of tire applying stations. Your man can remove and replace tire in a few moments with nothing but jack and wrench.

Can't creep, can't cut out at base, resilient! Single or dual.

The Goodyear Individual Block Truck Tire

This tire enjoys the advantage of being formed of blocks, **each** of

which is held tightly in place by its own individual fastenings.

Realise what that means! It means that you no longer have to bother with other than the block you wish to remove or adjust. It means that you can keep each block absolutely tight without reference to any other block, thus increasing the service of the tire. It means that you save an enormous amount of time and trouble.

To take out block, just unbolt one block-plate—remove it and out drops the **block**. Put in with equal ease.

4 Other Types

Solid Metal Base Truck Tire.

This is the tire for heavy service where the demountable feature is not desired. Follows same line of construction as the Solid Demountable.

Solid No-Rim-Cut Truck Tire.

A tire especially constructed for light delivery cars—where speed instead of load capacity is important item. Tough—durable—very resilient.

Solid Clincher Truck Tire. For light delivery or high-speed trucks fitted with standard clincher rims.

Solid Side Flange Truck Tire.

Made for both light delivery and heavy duty trucks. Fitted direct to standard S.A.E. wheels by use of clincher side flanges. This type is the nearest approach to ideal tire for universal use of any tire in the market.

Write Today For the Goodyear Truck Tire Book

This book explains all. We want all truck owners to have one. If in doubt as to which tire to use, consult our experts—No obligations. Free consultation a part of Goodyear Service. Write at once.

The Goodyear Tire & Rubber Company, Akron, Ohio

Branches and Agencies in 103 Principal Cities

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits

Main Canadian Office, Toronto, Ont.

Canadian Factory, Bowmanville, Ont.

THE BESSEMER TRUCK



BESSEMER MODEL "B"—2000 LBS. CAPACITY

Built in Three Sizes

1000 lb., \$1250

102" Wheelbase

2000 lb., \$1800

120" Wheelbase

3000 lb., \$2100

136" Wheelbase

A FEW OF THE MANY FEATURES OF BESSEMER CONSTRUCTION:

Long-Stroke Continental Motor
Timken Axles and Bearings
Left-Side Drive
Center Control

Unit Transmission and Jack-shaft Housing
Nickel-Steel Gears Mounted on F & S Bearings
Platform Springs
Accessibility of Working Parts

Now, Mr. Dealer, in simple justice to yourself you should investigate the Truck line we are offering. We can show you how to make money for yourself and save money for every one to whom you sell a truck. Our contracts are plain, man-to-man agreements. We ask you to sign nothing we would not sign ourselves.

AGENTS WANTED

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President

J. B. DUFFORD
Vice-President

C. H. DUFFORD
Sec.-Treas.

Bell Telephone, 128
Union Telephone, 578Y

Established 1885 Incorporated 1911 \$25,000.00 full paid

W. F. DUFFORD & CO., Inc.

The House Furnishers

320 East Washington Street

New Castle, Pa., November 18, 1912

A Complete Line of
Furniture of All Kinds
Carpets, Mattings
Linoleum, Oil Cloths
Window Shades and
Lace Curtains
Stoves, Ranges and
Kitchen Ware, China
and Glassware, Lamps
Mantels, Tile, Grates
Fine Fire Place Goods

BESSEMER MOTOR TRUCK COMPANY,
Grove City, Penna.

Gentlemen:—Our truck is doing fine, and so far we have had no trouble with it at all, we have been doing quite a bit of country delivering, as well as our city work. A travelling man from Milwaukee, Wis., told us that we had the nicest furniture truck he had seen between Wisconsin and New Castle, and we have had several other flattering testimonials from other travelling men. In fact, we like our truck better than any we ever saw, for our business, regardless of price. We feel that we would be doing any firm a favor in recommending a Bessemer Motor Truck to them.

Yours very truly,

W. F. DUFFORD & COMPANY.

"WHEN YOU BUY A BESSEMER YOU BUY THE BEST"

BESSEMER MOTOR TRUCK CO., Grove City, Pa.

NEW ENGLAND BRANCH: 58 CHURCH STREET, BOSTON, MASS.

When Writing, Please Say—"Saw Your Ad. in the C C J"

Devon TRUCKS



PRICE Model E, 3½ TON, complete with Stake Body and full equipment **\$3250**

PRICE Model D, 5 TON, complete with Stake Body and full equipment **\$3750**

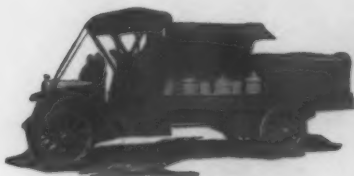
OUR DEVON TRUCKS have been placed on the market after two years test in actual daily service under the most severe conditions. All other American and European models have been carefully studied to recognize their defects or good points, and new, valuable improvements exclusively our own have been adopted. **THE BENEFIT OF OUR EXPENSE AND EXPERIENCE IS OFFERED YOU NOW.**

Devon Trucks positively give **GREATER MILEAGE, LESS TROUBLE TO OPERATE, NEED FEWER REPAIRS, RATE VERY HIGH IN FUEL ECONOMY, AND WILL PROVE IN ACTUAL SERVICE MORE DURABLE AND EFFICIENT THAN MANY OTHER TRUCKS OF GREATER LOAD CAPACITY AND HIGHER PRICE.**

The best of everything has been used and no expense spared to furnish an essentially **HIGH-GRADE COMMERCIAL VEHICLE.**

Send immediately for our Catalogue J, giving detailed specifications and further interesting and valuable information

Devon Engineering Company
512 Cherry Street, Philadelphia



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 Russell Creamery Co., San Francisco, Cal.
 Mt. Hood Creamery Co., Portland, Ore.
 Pulpit Farm & Dairy, Manchester, N. H.



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 Michigan Stove Co., Detroit, Mich.
 Western Foundry Co., Chicago, Ill.
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 Walkerville Brewing Co., Walkerville, Can.
 Muskegon Brewing Co., Muskegon, Mich.
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Commission Men

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 Norwood Transfer Co., Norwood, Ohio
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 San Francisco, Cal.

FEDERAL TRUCKS

From coast to coast,
 —in almost every
 line of business
 where efficiency, reli-
 ability and economy
 are demanded—you
 will find Federal
 Trucks.

The Federal will prove
 a profitable investment
 in **your** business.

Write for booklet, "The
 Federal in Your Line."

**FEDERAL MOTOR
 TRUCK COMPANY**
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 S. New England Telephone Co.
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 A. Wegener & Sons, Detroit, Mich.
 Rock Springs Water Co., Bridgeport, Conn.
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 Searchlight Gas Co.,
 New York, Chicago, Detroit
 Ann Arbor Gas Co., Ann Arbor, Mich.
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 Brushaber Co., Detroit, Mich.
 E. C. Minas Co., Hammond, Ind.
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Packers

Armour & Co., St. Louis, Mo.
 Louis Burk, Philadelphia, Pa.
 Kauffmans Beef Co., Chicago, Ill.
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Continental

This motor sets the quality-standard in many trucks

When you see a truck equipped with a Continental motor, you *know* it is a good truck.

Bank on it that it is a quality product, through and through.

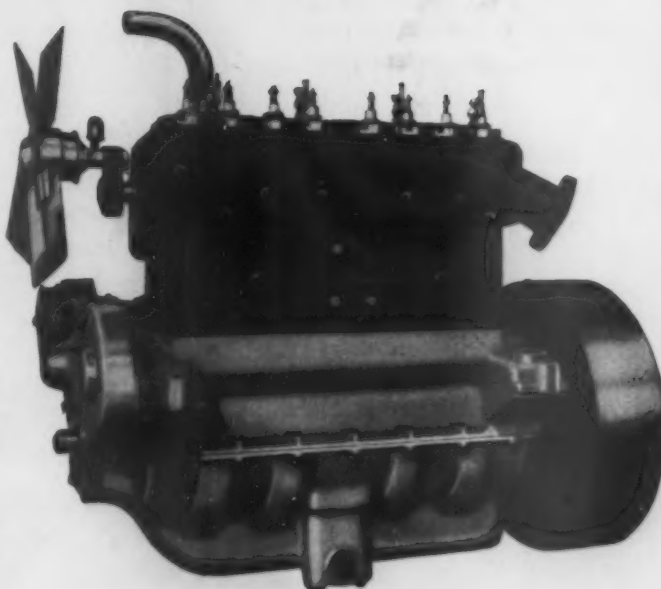
Because the manufacturer appreciates the quality of the Continental and he builds his truck to the Continental standard.

How well the manufacturer appreciates the quality of the Continental is shown by the great number of trucks that use it.

Many of these are trucks for which the Continental was adopted from the first.

Others have been added later, because their makers found they

could not produce a motor as good as ours on an economical basis.



20 to 70 H.P.

The manufacturer and the buyer alike should be interested in Continental Motors.

Specifications, literature, etc. mailed on request.

Continental Motor Mfg. Co., Detroit, Mich.

FACTORY REPRESENTATIVE, K. F. PETERSON,
122 S Michigan Blvd., Chicago, Ill.



The Ten Ton Tractor

WE want to call particular attention to the Garford ten ton tractor. *This job enables you to haul a ten ton load with a five ton chassis.*

This is probably the most advanced development in the modern gasoline truck.

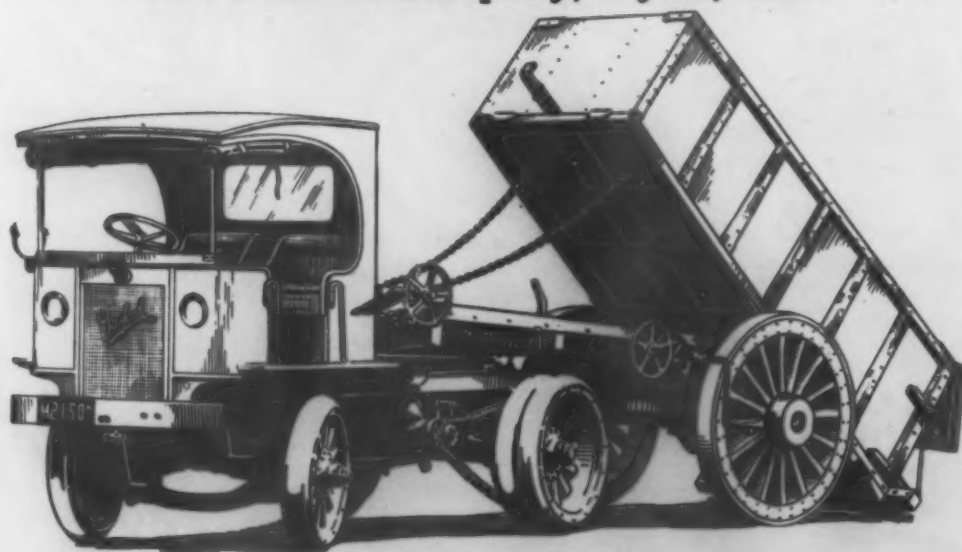
For big hauling work the Garford ten ton tractor has no equal. It is the most economical means of rapid transportation that was ever devised.

It is built for huge work.

There is a Garford truck for every line of business — one for your business.

Send for Garford literature. Please address Dept. 11.

The Garford Company, Elyria, Ohio



When Writing, Please Say—"Saw Your Ad. in the C C J"



How weight is distributed to get full traction in the

Pierce-Arrow 5-Ton Motor Trucks

IF the rear wheels of a motor truck do not take hold of the road, traction power is lost. The only thing that can make them take hold is *weight*.

By placing the motor in front of the driver's seat in the Pierce-Arrow Truck, provision is made to center 85 per cent. of the weight over the rear wheels.

This gives an amount of traction otherwise impossible, minimizes skidding and permits the truck to be started and stopped quickly. Thus advantage is taken of practically all the power delivered to the wheels by the silent, long-wearing worm gear drive which, in

turn, transmits 95 per cent. of the energy generated by the motor.

Economy such as this is well worth investigating before you decide on the motor trucks that are to make your deliveries at a saving.

THE PIERCE-ARROW MOTOR CAR COMPANY, BUFFALO, N. Y.

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WESTON MOTO

AXLES HUBS RIMS!



#76-L-J JACKSHAFT

THIS JACKSHAFT WAS DESIGNED FOR USE UNDER A 1,000 TO 1,500-POUND TRUCK OR DELIVERY WAGON. IT CAN BE FURNISHED COMPLETE AS SHOWN OR LESS THE THIRD MEMBER OR TORSION TUBE AND MACHINED TO FIT THE COVERT MODEL I TRANSMISSION. IT MAY ALSO BE FURNISHED WITHOUT BRAKES OR SPROCKETS, HANGERS AND RADIUS ROD LUGS IF SO DESIRED.

THIS IS A SEMI-FLOATING TYPE OF JACKSHAFT AND HAS BEEN FOUND VERY EFFICIENT IN SERVICE ON TRUCKS OF THE WEIGHT AND CAPACITY FOR WHICH IT WAS DESIGNED.

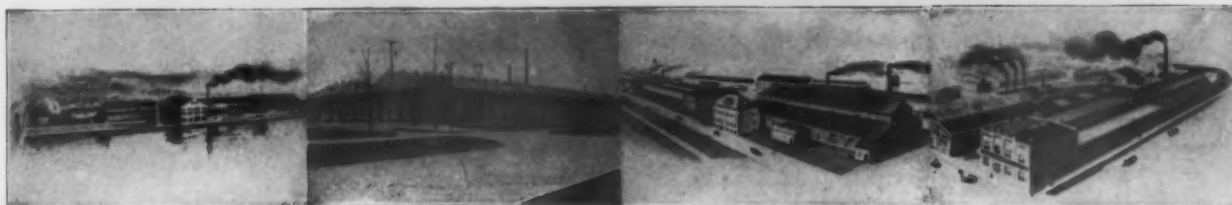
FLINT,

MICH.

ONE-TON

*"Little Giant"*COMMERCIAL
CAR

ANY STYLE BODY

AND FOUR OF OUR SIX FACTORIES IN WHICH
THE LITTLE GIANT IS BUILT

Franklin Plant No. 1

Detroit Plant

Franklin Plant No. 2

Cleveland Plant



THE LITTLE GIANT was first sold on the reputation of the twenty years manufacturing experience of our combined factories. It has now established its own reputation and lives up to the high standard set by our other products during the last twenty years.

The LITTLE GIANT has proved itself the best one-ton commercial car on the market; our factory has added another mechanical triumph to its already long list. Factory and car have both won laurels—they are proud of each other.

Now, Mr. Business Man, do not hesitate any longer—the LITTLE GIANT is your best buying opportunity. It has established its superiority in every line of business and under every delivery condition.

We are able financially to back up every claim.

DEALERS:—If you can show us that you are a *responsible* dealer and your territory is still open, then you are the man we are looking for. Remember, this is a \$11,000,000 manufacturing corporation—we have dealers over the entire world. The quality of our product and our co-operation with these dealers have enabled us to market our product in all corners of the globe and given us over 20,000 satisfied customers.

We co-operate with every dealer,—his success in his territory is just as important to us as it is to him.

Now if you are that responsible party, write or wire us at once.

Chicago Pneumatic Tool Company

Fisher Building, Chicago

50 Church St., New York

BRANCHES ALL OVER THE WORLD

When Writing, Please Say—"Saw Your Ad. in the C C J"

"The Menominee"

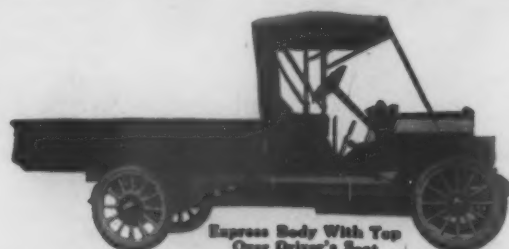
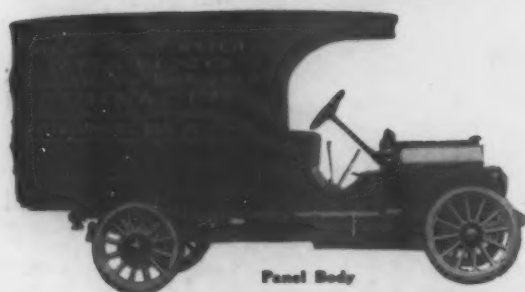
Motor Trucks

1500 lbs. Carrying Capacity, Express or Stake Body	-	\$1200.00
2000 lbs. Carrying Capacity, Express or Stake Body	-	\$1500.00
3000 lbs. Carrying Capacity, Stake Body	- - -	\$1950.00

¶ When "The Menominee" was first put on the market we were confident that it would occupy a predominant place among the light commercial wagons. The success obtained during the two years it has been in use, and the fast increasing demand it has created on account of its efficiency, due to its proper design and construction has justified our confidence.



Express Body

Express Body With Top
Over Driver's Seat

Panel Body



Stake Body

¶ The attraction of our exhibit and the large number of orders taken at the Chicago Show is certainly a most emphatic affirmation of "The Menominee" Leadership.

Write us now for our agency terms. You cannot afford to let your competitor handle the line in your territory.

Get Our Free Illustrated Catalogue

D. F. POYER COMPANY

MENOMINEE

MICHIGAN

When Writing, Please Say—"Saw Your Ad. in the C C J"

The Electric is the Logical Delivery Car The Logical Electric is

**THE
Detroit
ELECTRIC**



The electric is destined to be the delivery vehicle for city and suburban use, because its simplicity of control ideally adapts it to congested traffic conditions. It "gets away" instantly, anywhere without gear-shifting.

There is no complicated mechanism requiring constant adjustment, oiling and expert attention.

The Detroit Electric is the logical car because it is made in the largest and most modern plant in the world producing electric commercial vehicles and pleasure cars exclusively.

Isn't it reasonable to believe that large production, ample capital and expert engineering can supply the best car investment for the money?

Five speeds, all controlled by one simple lever on the steering wheel, are at the instant command of the Detroit Electric driver.

The Detroit Electric has ample mileage for constant everyday use. It will climb any hill that any commercial car is ever required to climb.

Electricity is getting cheaper and now is by far the cheapest form of motive energy.

In addition, Detroit Electric construction costs less for maintenance. The long life of a Detroit Electric makes its total annual cost most satisfactory.

The Detroit Electric is designed exclusively for the Edison battery and yet its price is little more than that of a vehicle equipped with a lead battery.

The light weight of the Edison battery permits of light and yet rugged construction. The Edison battery is practically indestructible. There are no acids or renewals.

Detroit Electric motors are large and powerful.

Illustrated catalog and full information sent upon request.



ANDERSON ELECTRIC CAR COMPANY

456 Clay Avenue, Detroit, Mich., U. S. A.

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Brooklyn
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Minneapolis

Selling representatives in most leading cities



Baker Electric Trucks installed for H. J. Heinz Co.

The Cheapest Way to Deliver Goods

How the H. J. Heinz Company is Proving It!

One of the big national organizations now using Baker Electric Trucks is the H. J. Heinz Company. These trucks were installed after careful analysis as to HOW transportation costs could be reduced, and WHAT TRUCK would effect the greatest saving. The result was the purchase of

Baker Electric Trucks

Let Us Send You Valuable Facts and Figures about YOUR Problems

Like the great fleets of Bakers purchased by the American Express Company, the Heinz trucks were sent out to branches in various cities, where they were expected to deliver practically 100% service regardless of traffic or road conditions, regardless of the ability of the men who handled them. They did it!

Baker Trucks may be seen heavily loaded winding their way through the congested

traffic of New York and Philadelphia. They may be seen handling vast quantities of merchandise over the roughest parts of Chicago and St. Louis. They take the formidable hills of Kansas City and Portland when others fail. In every important business center from Boston to 'Frisco you will find the sturdy Baker proving the supremacy of the electric over every other truck, regardless of motive power.

Baker Trucks Insure CONTINUOUS SERVICE

These facts stand out in strong contrast with the record of trucks whose type of construction results in constant grind, wear and tear, with frequent replacements and consequent delays and short life.

How the Baker can save you money in your delivery department; how its simplicity of construction facilitates handling by inexpensive men; how it consumes less current than any other electric truck built, are a few of the many points wise business men are investigating before they buy a truck of any kind.

"Why an Electric Truck" mailed upon request

There are Baker Electrics from 500-pound to 4-ton capacity. The largest organization in the world devoted exclusively to electric vehicle manufacture is back of every car.

THE BAKER MOTOR VEHICLE CO., Cleveland, O.

Canada: The Baker Motor Vehicle Co. of Canada, Ltd., Walthamville, Ont.

Makers also of Baker Coupes, Victorias, Droughams, etc.

Branches or Representatives in Principal Cities.

Applications solicited for representation in open territory.

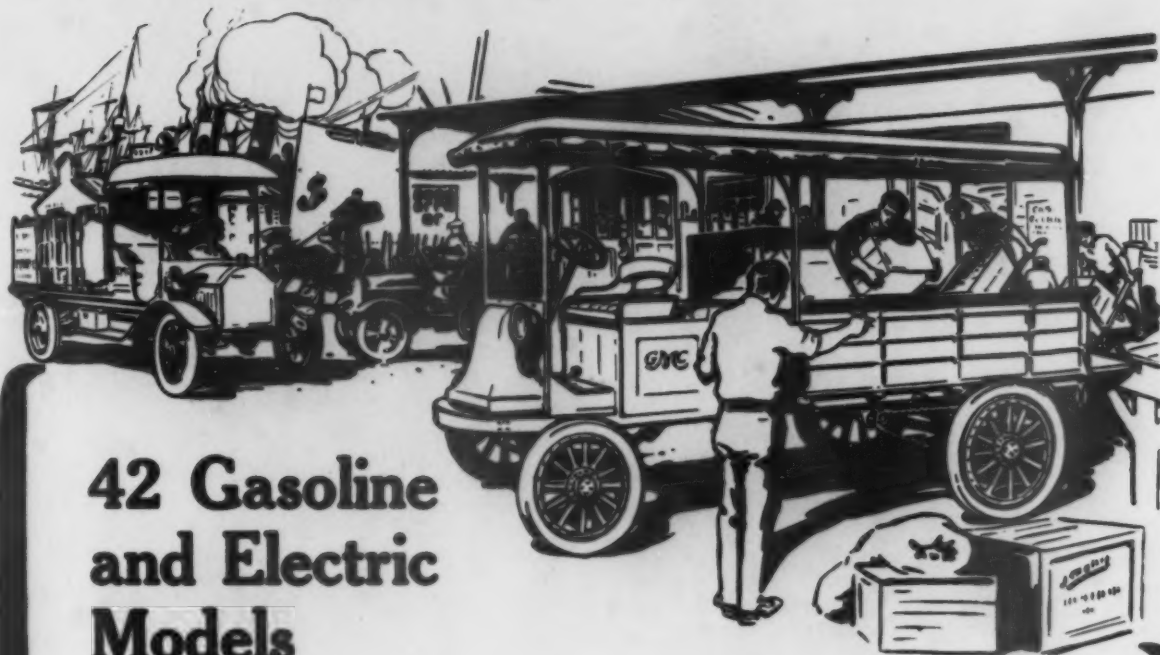


One of the Baker Light Delivery Models





TRUCKS



42 Gasoline and Electric Models

BUSINESS houses that are "motor-truck wise" know that the only way to secure the greatest profit from a motor truck installation is to select vehicles that are rightly adapted in size, capacity and type to the service required.

Recognizing this as a fundamental in the successful use of commercial vehicles, General Motors Truck Company builds motor trucks of utmost efficiency and economy for every class of haulage or delivery service. The GMC Line now comprises both gasoline and electric trucks in 42 capacities and sizes, and new models and sizes are constantly being developed to meet your special requirements.

GMC trucks are built to meet the conditions as they exist in your business. You need not force your service to fit the truck—you can select a truck that fits the service.

Gasoline trucks are offered in 1½, 2, 3½ and 5-ton sizes—the heavy duty models in both "motor under hood" and "motor under seat" types.

GMC Electrics are manufactured in the most complete range of sizes and dimensions ever produced—24 stock models—8 load capacities—1000 to 12000 pounds. Each capacity can be furnished in three frame lengths for short, medium and long bodies and platforms. And there are further variations within standard capacities, designed to meet the needs of special classes of service.

And above all, remember, that back of every truck in the comprehensive GMC line, stands the permanence and responsibility of General Motors Company—the largest manufacturers of automobiles in the world.

Descriptive catalogues sent on request

GENERAL MOTORS TRUCK COMPANY

Pontiac, Mich.

Makers of Gasoline and Electric Trucks of all capacities

BRANCHES.—New York Chicago Boston Philadelphia Kansas City Detroit St. Louis

When Writing, Please Say—"Saw Your Ad. in the C C J"

The Question in the mind of every merchant, manufacturer, or transportation man is not, "Shall I buy a motor-truck?" but "Which one shall I buy?"

Accurate tests with all kinds of outfits, followed by a careful analysis of these results, have proved that motor trucks furnish the logical and most economical solution of the trucking problem.

How can I buy efficiently?

First tell us something about your business and let us make recommendations regarding the number and size of vehicles that you need.

We may be able to save you money if you let us do this.

This we will work out and plan for you, so that the trucks will eventually pay for themselves.

How can you do this?

Our plan for financing truck-buyers makes it easy for you to buy.



Universal Motor Trucks

You simply make a small deposit upon delivery of truck and handle the rest in time payments. It needs little initial investment on your part—you get the best truck on the market under exceedingly favorable conditions.

How much do you charge for your trucks?

We charge no more for our trucks than is charged for other first-class motor trucks. Neither are our prices greater than are charged

by other companies for trucks sold for cash. Prices in the lead, F.O.B. Detroit:

Standard 3-ton Chassis	- - -	\$3,400.00
Standard 2-ton Chassis	- - -	\$2,800.00

What about guarantee?

We give the standard guarantee against defective parts and workmanship, and unless we knew our trucks would give satisfaction we certainly could not afford to let the purchaser run them for a year on a time-payment basis. Every part of the truck

is of a selected quality, built in our own factories in Detroit, Michigan—the largest factories in the country devoted exclusively to the manufacture of commercial vehicles.

P. S. We build a 1-ton truck, guaranteed to carry 3,000 pounds, of unusual stability. This is a worm-drive truck and sells for \$1,950.00 Write us about it.

UNIVERSAL MOTOR TRUCK COMPANY

Factories:—Detroit, Michigan, U. S. A., 507 Theodore Street. FRED K. PARKE, Gen. Mgr.

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